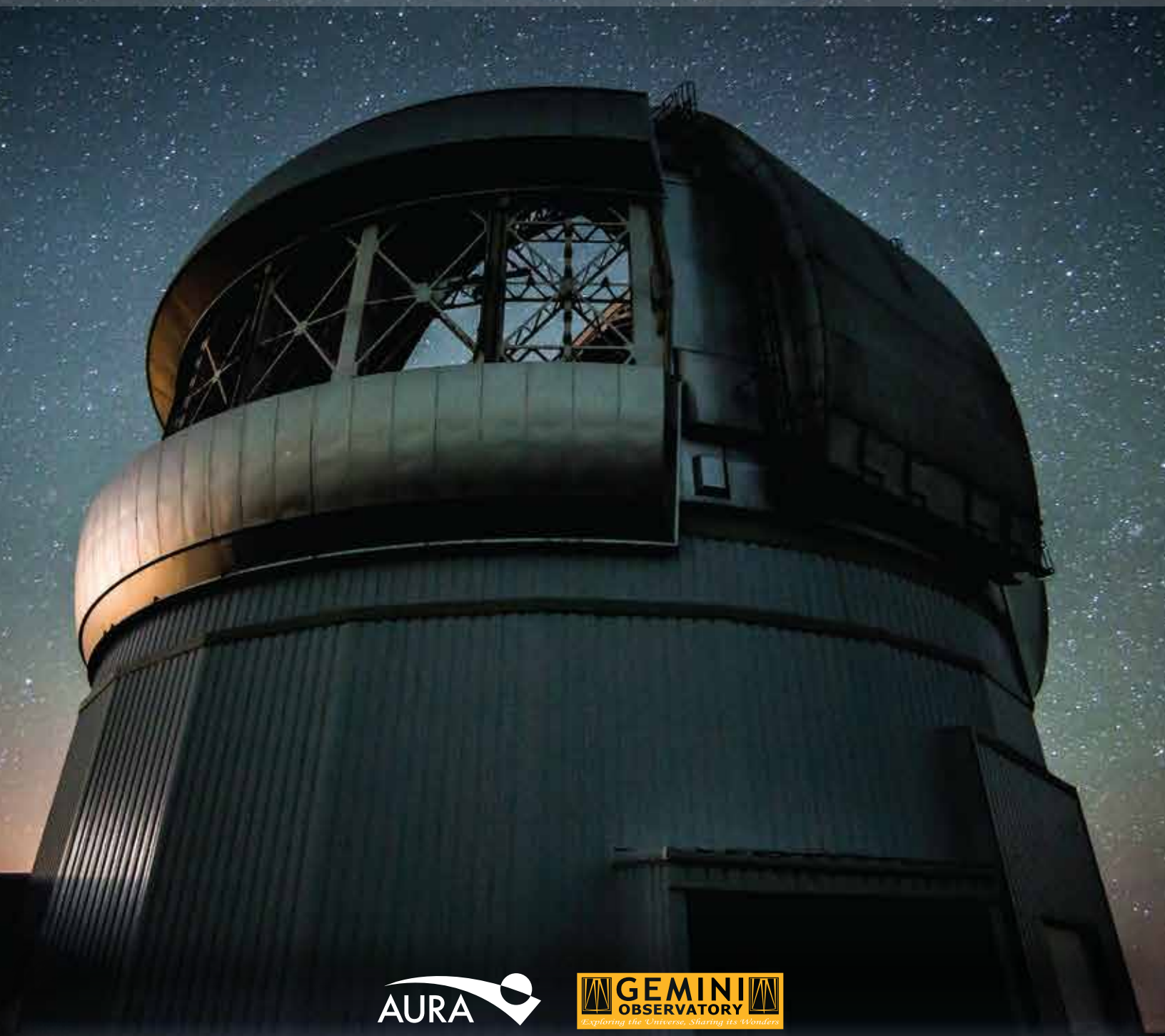
2018 ANNUAL PROGRESS REPORT OF THE GEMINI OBSERVATORY



AURA

GEMINI OBSERVATORY
Exploring the Universe, Sharing its Wonders

NSF

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Ministry of Science, Technology and Innovation
BRASIL

Ministerio de Ciencia, Tecnología e Innovación Productiva
Presidencia de la Nación

CONICYT

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1 Introduction & Science Highlights

1.1 Introduction

Gemini Observatory is an international partnership operating twin 8-meter diameter optical/infrared telescopes located on two of the best observing sites on Earth. Locations in the northern and southern hemispheres (Hawai'i and Chile) provide access to the entire sky. A range of instrumentation enables visual and infrared imaging and spectroscopy, with enhancements from adaptive optics and specialized instrumentation. Gemini Observatory's mission is:

> *To advance our knowledge of the Universe by providing the international Gemini Community with forefront access to the entire sky.*

Gemini's International Participants include the United States (National Science Foundation, NSF); Canada (National Research Council, NRC); Chile (Comisión Nacional de Investigación Científica y Tecnológica, CONICYT); Brazil (Ministério da Ciência); Argentina (Ministerio de Ciencia); and the University of Hawai'i (site host). Additionally, in 2018 Gemini worked with three Limited-Term Collaborators: Korea (Korea Astronomy and Space Science Institute, KASI); Ben-Gurion University; and Weizmann Institute of Science. (In 2019 Korea becomes a full participant to the International Agreement.) The operations and maintenance of the Observatory are managed by the Association of Universities for Research in Astronomy, Inc. (AURA) through a cooperative agreement with the National Science Foundation (NSF). The NSF acts as the Executive Agency on behalf of the International Participants.

Two primary activities dominate the work of the Observatory. The first is maintaining and supporting operations on behalf of the international scientific community of the Gemini Partnership. The Observatory's goal is to enable our users' scientific progress by being an efficient, nimble, and responsive observatory. We offer a variety of observing and proposing modes to suit the varying needs of our individual Principal Investigators (PIs). Astronomers may visit and conduct their own observations, or have staff execute their observations in a "queue" mode. The queue matches observing conditions to science programs and provides access to the time domain. Now well established, the Fast Turnaround program allows monthly proposals, combined with rapid peer review by other PIs. Successful proposers can obtain data as early as a month after having their scientific idea.

Gemini's second primary activity is the development of instrumentation and facilities. Development projects provide novel capabilities to users through new facility instruments, upgrades to existing facility instruments, and visitor instruments. The construction of the new facility instruments GHOST (Gemini High-resolution Optical SpecTrograph) and SCORPIO (Spectrograph and Camera for Observations of Rapid Phenomena in the Infrared and Optical) continue. Gemini also welcomed back several previous visiting instruments and worked with teams for several new visiting instruments.

As a result of these Gemini activities, users of Gemini continue to produce a steady stream of important and impactful scientific results, highlights of which are included in **Section 1.2**. A complete listing of observing programs allocated and publication results are included in Appendices B, C, and D.

In addition to its nightly observing operations, Gemini continues to position itself for the future, with work on new instrumentation and maintenance and upgrades to the telescopes and facilities.

Additionally, Gemini continues to develop its Strategic Plan for the coming decade of 2021-2030.

Several key parts of this Strategic Plan will be enabled by a new award from NSF to AURA made in late 2018 to fund "Gemini Observatory in the Era of Multi-Messenger Astronomy: High Image Quality and Rapid Response to Cosmic Events" (NSF AST- 1839225), which will be known as the GEMMA program. The funding is handled through a new Cooperative Support Agreement (CSA) between AURA and the NSF and runs over six years (FY2019-FY2024). The GEMMA program consists of four projects as follows:

- GNAO: A multi-conjugate AO system for Gemini North providing a 2 arcmin diameter AO corrected field to all facility instruments
- RTC: A common real-time computer platform for GeMS and GNAO that is extensible to other Gemini AO systems
- TDA: Gemini in the Time Domain Network, enabling Gemini's participation and leadership in follow-up observations from discoveries from LIGO, LSST and other time domain alerts
- PIO effort for multi-messenger astronomy leading to development of planetarium programming as well as education for science communicators and media

In this 2018 Annual Report, we present an overview of the activities and scientific output of Gemini Observatory. Appendices list acronyms used in this report, approved science programs in the most recent two completed semesters (2017B/2018A), publications in 2018 using Gemini data, and staff accomplishments. Starting with **Section 3**, section numbering in this annual report matches the section numbering in the *2018 Program Operations and Development Plan of the Gemini Observatory*, with the text of the original sections of that document reproduced *italicized and highlighted*, followed by the text of this annual progress report.

1.2 Science Highlights

Gemini science results flowed in a steady stream over the past 12 months, appearing in the form of nearly 200 refereed papers, 10 web features, and 4 press releases (not including four other press releases on non-science topics). See the summary below of a selection of scientific studies based on Gemini data to get a sense of the variety of research that is enabled by Gemini Observatory.

Hydrogen Sulfide in the Clouds of Uranus

Observations obtained with the Near-Infrared Integral Field Spectrometer (NIFS) on Gemini North have confirmed that hydrogen sulfide (H_2S), a colorless gas with the distinctive aroma of rotten eggs, is a key component of the clouds of Uranus. The study appears in Nature Astronomy.[1] The Gemini observations, shown in Figure 1.2-1, sampled reflected sunlight from a region immediately above the main visible cloud layer in Uranus's atmosphere.

The detection of hydrogen sulfide high in Uranus's cloud deck contrasts sharply with the inner gas giant planets, Jupiter and Saturn, where the bulk of the upper clouds are comprised of ammonia ice, and no hydrogen sulfide is detectable. These differences were likely imprinted within the proto-solar nebula, where the balance between the amounts of nitrogen and Sulphur (and hence NH_3 and H_2S) was determined by the temperature, and thus the location, of a given planet's formation. The study sets a lower limit to the amount of H_2S in the upper atmosphere of Uranus and demonstrates that this distant icy world is an important probe of our Solar System's early history.

[1] https://www.nature.com/articles/s41550-018-0432-1

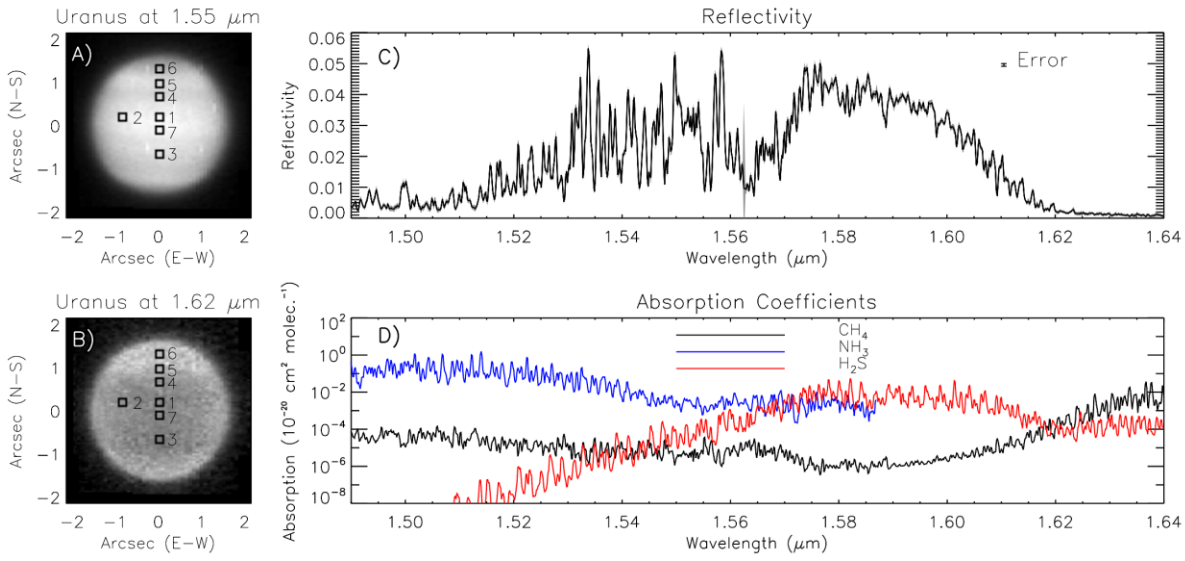

Figure 1.2-1: The appearance and spectrum of Uranus at the wavelengths observed by Gemini/NIFS and associated absorption spectra of CH_4, NH_3 and H_2S. Panel A: Uranus at 1.55 µm, showing the position of the seven 5×5 pixel test areas used for analysis. Panel B: The appearance of Uranus at 1.62 µm. Panel C: Reference spectrum of Uranus averaged over area '1' (in Panel A) near the center of the planet's disk, just north of the equator. Panel D: strength of the model absorption coefficients derived over the Gemini/NIFS spectral range for conditions found at the tops of Uranus' main visible clouds. [Figure reproduced from Irwin et al. 2018, Nature Astronomy, 2, 420.]

Unmasking Obscured Supernovae

A star larger than about eight solar masses is expected to end its life as a core collapse supernova (CCSN). However, fewer of these explosions are observed than expected, perhaps because these events occur within regions of intense star formation where dust obscures the optical light. The disparity between observations and expectations is particularly apparent in luminous infrared galaxies (LIRGs), which form stars at very high rates in regions with large amounts of obscuring dust

To find the "missing" supernovae, an international team of astronomers embarked on Project SUNBIRD, for "Supernovae UNmasked By InfraRed Detection." The project monitors LIRGS with the Gemini South Adaptive Optics Imager (GSAOI) used with the Gemini Multi-conjugate Adaptive Optics System (GeMS) on Gemini South. By observing at high resolution and in the near-infrared at 2.15 microns, SUNBIRD aims to uncover CCSNs that otherwise would remain hidden in the dusty, crowded regions within LIRGs. As reported in The Monthly Notices of the Royal Astronomical Society[2], the project discovered three CCSNs) in a modest amount of observing time. The study concludes that the majority of CCSNe (Figure 1.2-2) that explode in LIRGS have been missed as a result of dust obscuration and inadequate resolution.

[2] https://academic.oup.com/mnras/article-abstract/473/4/5641/4259573

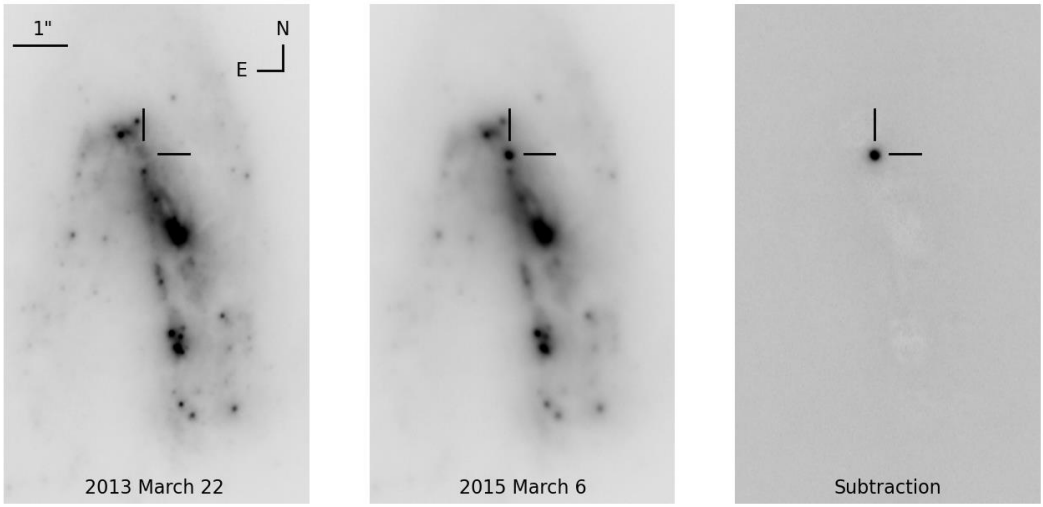

Figure 1.2-2: The core collapse supernova SN2015cb discovered by Project SUNBIRD in the luminous infrared galaxy IRAS 17138-1017 using near-infrared imaging from GeMS/GSAOI. This is one of three supernovae studied in a paper presenting the first results from this project. From left to right, the panels show: the initial 2013 reference image, the 2015 discovery image, and the difference of the two images, highlighting SN2015cb about 2 arcseconds from the center of this dusty, star-forming galaxy. [Reproduced from Kool et al. 2018, MNRAS, 473, 5641.]

Mass of the Black Hole Powering the Most Distant Known Quasar

Quasars are believed to be powered by the accretion of material during the active phase of the growth of a supermassive black hole. The epoch of peak quasar activity, and thus the time of the most rapid supermassive black hole growth, occurred about 10 billion years ago at around redshift z = 2. Quasars have been observed at much higher redshifts, of course, and now a new record has been established by the discovery of quasar at z = 7.54. The object was identified as a "dropout" in optical imaging data. At this redshift, the Universe was only about 5% of its current age, or about 690 million years old.

Spectroscopic data from the Gemini Near-InfraRed Spectrometer (GNIRS) on Gemini North played a key role in determining the mass of the black hole powering this record-breaking quasar. The GNIRS data probed the Mg II lines, emitted in the rest-frame UV but redshifted well into the infrared (Figure 1.2-3). Analysis of the line profiles implies a supermassive black hole of 800 million solar masses. This is a surprisingly large mass for a black hole to reach in so short a time after the Big Bang. The study appears in the journal *Nature*.

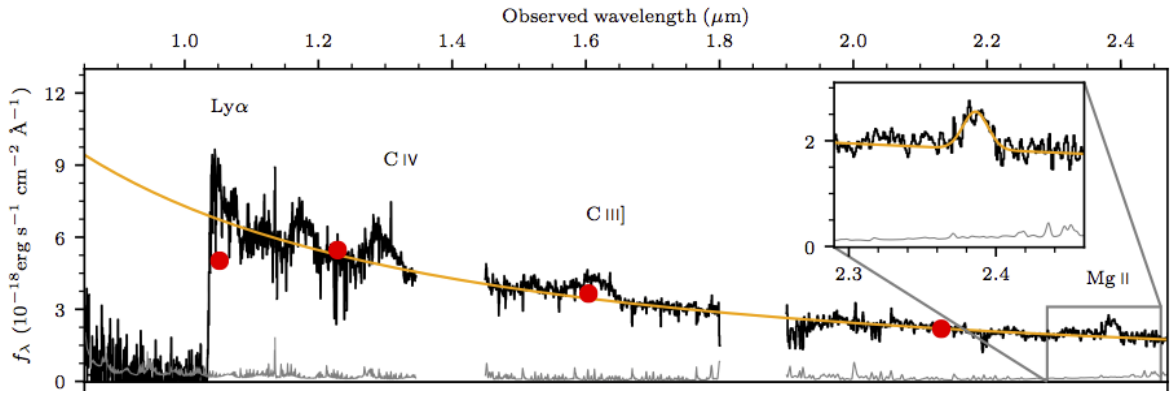

Figure 1.2-3: Combined Magellan/FIRE and Gemini/GNIRS near-infrared spectrum of the quasar J1342+0928 at z = 7.54. The inset shows the region of the GNIRS spectrum around the redshifted Mg II line, the width of which played a crucial role in determining the mass of the supermassive black hole powering the quasar. [Figure reproduced from Bañados et al. 2018, Nature, 553, 473.]

Gemini Speckle Imaging of Binaries among K2 Planet Hosts

The majority of the known exoplanets have been discovered by the *Kepler* mission via the transit method. However, the 4-arcsec pixel size of *Kepler* means that light from any nearby companion or background object will be blended with that of the planetary host. The blending reduces the observed depths of planetary transits and can bias their inferred sizes. Thus, knowing the fraction of exoplanet hosts that are in binary systems is important for determining the distribution of planetary sizes as well as establishing any possible relationship between stellar multiplicity and planet formation.

A team of astronomers using the Differential Speckle Survey Instrument (DSSI) at both Gemini North and South targeted a sample of planetary hosts found in *Kepler*'s K2 mission. The K2 mission has detected more than 500 exoplanet candidates in a series of fields along the ecliptic plane. K2's observing strategy results in differences in the distributions of mass and orbital properties as compared to the original *Kepler* sample. The team observed detected 23 companions to the 102 stars observed at Gemini. Figure 1.2-4 compares the distributions in magnitude difference and separation of the simulated and actual Gemini observations. Assuming the field binarity fraction of 40-50%, the simulations predict 26 ± 6% of the exoplanet hosts should have companions detectable by DSSI on Gemini, consistent with the observations. There is no evidence that the stellar binarity suppresses planet formation, even at distances as small as 50 AU. The study appears in the July *Astronomical Journal*.[3]

[3] http://iopscience.iop.org/article/10.3847/1538-3881/aac778/meta

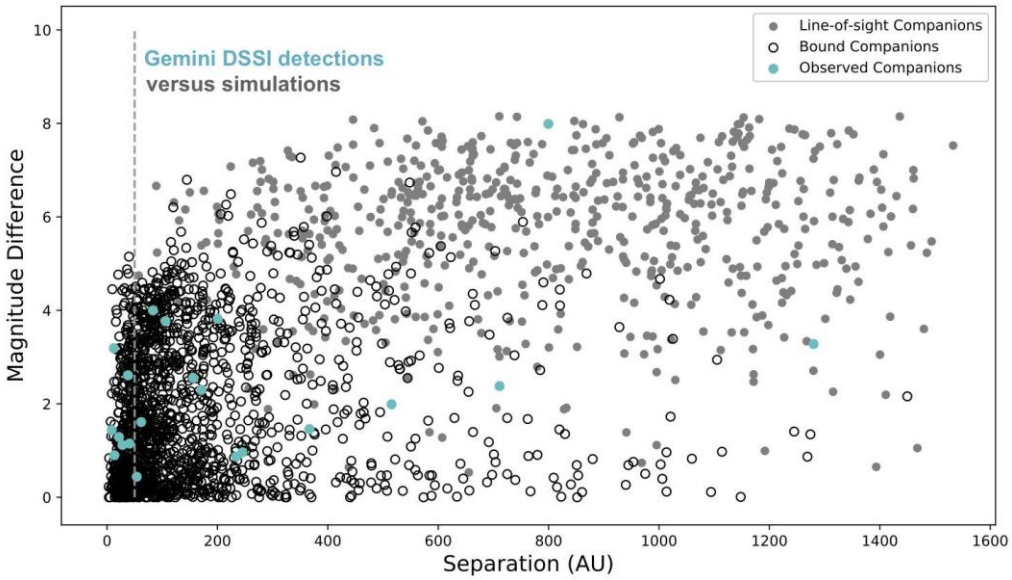

Figure 1.2-4: Magnitude differences for real and simulated stellar companions as a function of separation in AU. The cyan points are the 21 K2 exoplanet hosts at known distances that have stellar companions discovered by DSSI on Gemini. Open black circles represent a random sampling of simulated stellar systems with bound components that would be detectable by Gemini/DSSI, while filled gray circles represent detectable line-of-sight companions from the same simulations. The dashed gray line is at 50 AU. [Figure adapted from Matsen et al. 2018, AJ, 156, 31.]

Dust and CO Production in a Nearby Core-Collapse Supernova

The explosion of SN2017eaw in the nearby galaxy NGC 6946 has provided a rare opportunity to follow in detail the evolution of dust and CO production in a core-collapse supernovae (ccSNe) over an extended period. NGC 6946 is popularly known as the Fireworks Galaxy because it has produced many ccSNe. Near-IR spectra of SN2017eaw were obtained through DD and FT programs at Gemini North during semesters 2017A, 2017B, and 2018A. The first nine of these spectra, obtained in 2017, are shown in Figure 1.2-5. The main goal of the observations was to study the formation of carbon monoxide (CO) at wavelengths from 2.0 to 2.5 µm. CO is a powerful coolant, which aids in making dust formation possible; its presence is detected by day 124 based on the sharp increase in signal near 2.30 µm. Evidence of dust also begins at day 124, based on the flattening of the continuum slope longward of 2.1 µm.

The resulting study, published in ApJ Letters[4], used the spectra to estimate the CO mass produced by SN2017eaw. The results qualitatively matched models for a progenitor star of roughly 15 solar masses, but the dust production occurred at earlier times than predicted. Fits to the continuum indicate that the temperature of the dust emitting is roughly 1300 K, and thus is likely graphitic, which can condense at higher temperatures than amorphous carbon. The team has continued to monitor the evolution of SN2017eaw both spectroscopically using GNIRS and photometrically using NIRI, with the most recent observations occurring in October 2018.

[4] http://iopscience.iop.org/article/10.3847/2041-8213/aad77f/meta

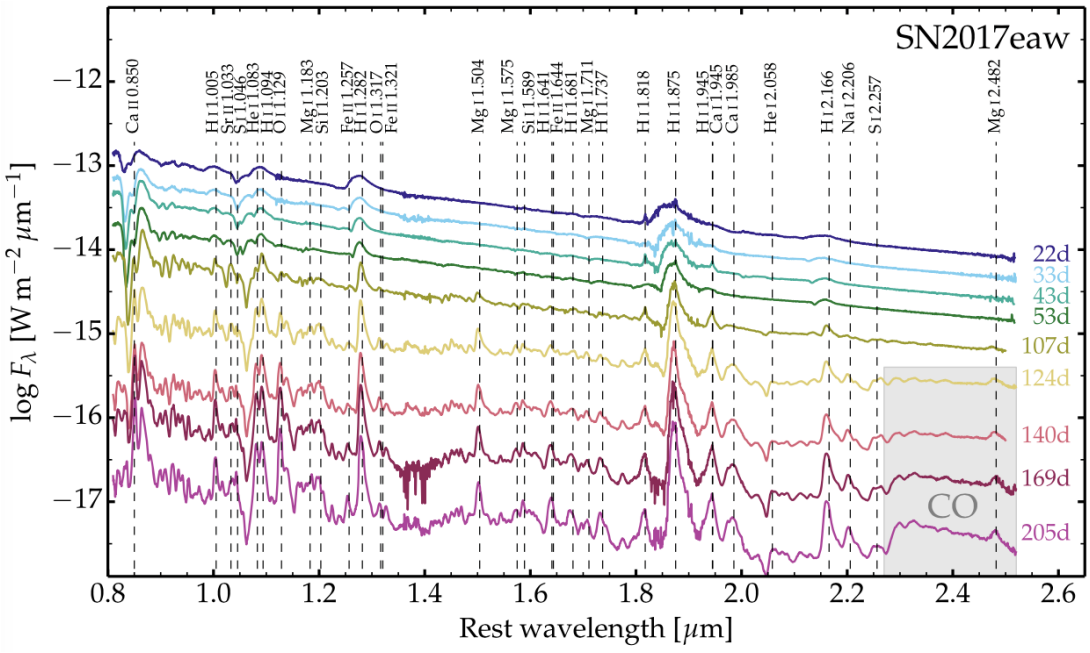

Figure 1.2-5: Gemini/GNIRS spectra of SN2017eaw obtained from 22 to 205 days post explosion. Prominent emission and absorption lines are listed. The spectra have been scaled to give an even vertical spacing. The wavelength interval in which emission by CO is present is shaded; the flattening of the long-wavelength continuum at 124 days and later is the signature of dust production. [Figure from Rho, Geballe, Banerjee, et al. 2018, ApJ, 864, L20.]

Confirmation of the Most Distant Known Radio Galaxy

An international team of astronomers has discovered the most distant radio galaxy to date, observed just one billion light years after the Big Bang, when the Universe was roughly 7% of its current age. The team used GMOS-North to measure a redshift of z = 5.72, the largest redshift of any known radio galaxy, based on the Lyman-α line (Figure 1.2-6), for the radio galaxy identified as TGSS J1530+1049. The object was selected as a high-redshift radio galaxy candidate based its steep spectral index and compact morphology at radio wavelengths and was targeted for deep spectroscopy at Gemini. The resulting study has been published in MNRAS.

Because the radio emission is believed to be powered by a supermassive black hole, which must be in place long enough for the jet to grow to its observed size, the discovery of TGSS J1530+1049 indicates that black holes can grow to large masses very quickly. The measured redshift of TGSS J1530+1049 places the galaxy near the end of the Epoch of Reionization, when the majority of the neutral hydrogen in the Universe was ionized by high-energy photons from young stars and perhaps other sources of radiation. The question of whether or not AGN, including quasars and radio galaxies, may have contributed to the reionization remains controversial. Distant radio galaxies such as this can be used as tools to find out more about this early period in the history of the Universe.

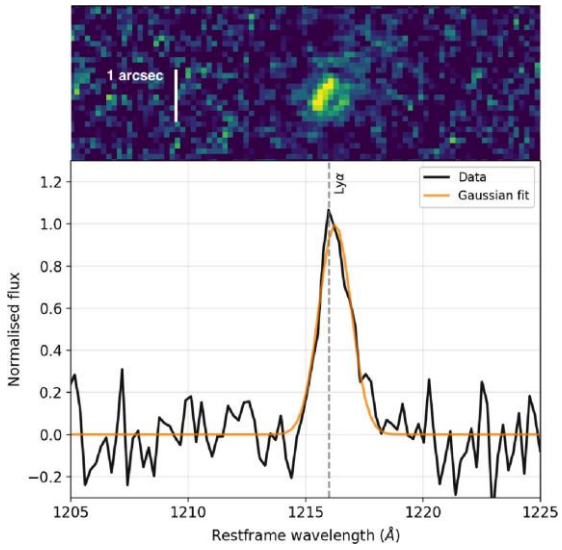

Figure 1.2-6 Top: Two-dimensional GMOS spectrum with the strong emission feature detected in the radio galaxy TGSS J1530+1049. The size of the emission region is a bit less than one arcsecond. **Lower panel**: 1-D spectrum of TGSS J1530+1049 (black line) is compared to a simple, symmetric Gaussian fit (orange line) to the emission feature. The asymmetry of the data with respect to the Gaussian fit indicates that the emission is Lyman-α at redshift of z = 5.72, making TGSS J1530+1049 the most distant radio galaxy known to date.

[Figure from Saxena et al. 2018, MNRAS, 480, 2733.]

1.3 Proposal and Publication Statistics

Gemini offers a variety of different program types and observing modes and serves hundreds of Principal (PIs) each year. We list the total numbers of approved programs by proposal mode for semesters 2017B and 2018A in Table 1.3-1. National Time Allocation Committees evaluate "Semester" programs which, once accepted, may be executed in queue or classical mode. Project titles and PIs in these completed semesters are listed in Appendix D.

Overall, the publication rate based on Gemini observations continues to be strong. As shown in Figure 1.3-1, more than 200 refereed papers were based on Gemini data this year.

Proposal Mode	N
2017B	
Semester	165
Large and Long	14
Fast Turnaround	40
Discretionary	22
2018A	
Semester	188
Large and Long	12
Fast Turnaround	52
Discretionary	18

Table 1.3-1: Number of accepted programs per proposal mode for completed semesters

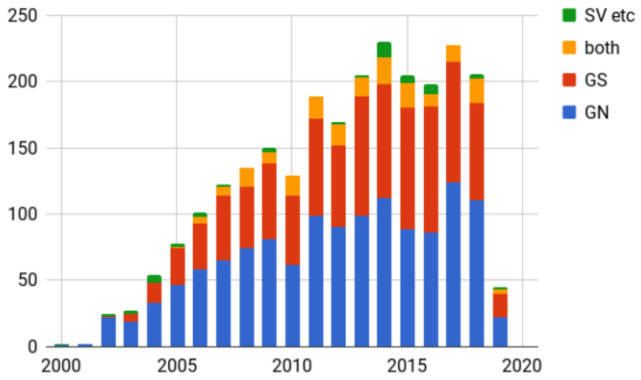

Figure 1.3-1: Publications from Gemini programs. 2018 publications extrapolated from the November total.

2 Finance & Staffing

2.1 Finance

A primary responsibility of the Finance team is to interface with the various appropriate parties with respect to the Observatory's overall administrative and contractual obligations. Frequent interaction is maintained with the National Science Foundation (NSF); major subcontractors, the International Gemini Participants and Collaborators, AURA's independent audit firm, property and casualty insurers, Observatory governance committees, and the AURA Corporate Office. The Finance team provides Gemini managers and users with a varied array of corporate financial services that include compliance reporting, strategic financial planning, project planning and management, and financial budgeting and reporting.

Since inception, Gemini Observatory has based its financial year (FY) on a calendar year (CY) (January to December), for budgeting and reporting purposes. The calendar year aligns with the majority of the Participants' financial year, while other Participants have a different 12-month cycle for their financial year. In pursuit of aligning Gemini's fiscal year with that of the Management Organization for the Observatory (AURA) and with the fiscal year of the Executive Organization (NSF), in May, 2018, the Board approved our request to change to a fiscal year that will run from October 1 in any one year to September 30, in the year immediately following. To accomplish this transition, the Gemini Board approved that Gemini Observatory should plan for a 9-month FY19 "year" running January 2019 to September 2019. Simultaneously all Participants confirmed that the funding planning cycle would remain on a calendar year basis.

2.2 Budget

2.2.1 Partner Contributions

The schedule of contributions for the Gemini Observatory budget is governed by a set of Administrative Guidelines; i.e., agreements made among the members of the Gemini International Partnership, including the NSF. These agreements clarify the members' partnership shares and the timing for the payment of contributions. The chart in Figure 2.2.1-1 shows the distribution of the Gemini cost shares under the current Partnership.

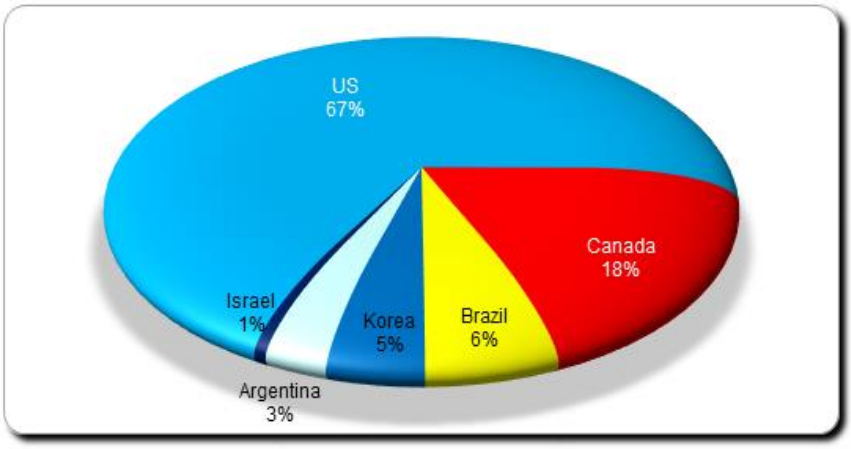

Figure 2.2.1-1: Partners' cost shares

Table 2.2.1-1 sets forth 2018 actual contributions by partner for Operations and Maintenance (O&M), Instrument Development Fund (IDF), and the combination of the O&M and IDF funds, including contributions from limited-term participants.

Contributions (in US $000)	O&M	IDF	Total
US	19,120	1,912	21,032
Canada	5,211	521	5,732
Argentina	891	89	980
Brazil	1,871	187	2,058
Korea*	1,500		1,500
Israel*	100	100	200
Total	28,692	2,808	31,501

*Limited-term arrangement in 2018

Table 2.2.1-1: 2018 actual contributions by Partner

Gemini uses O&M funds to support the day-to-day activities involved in operating the telescopes and facilities. Broadly speaking, these activities are science support, engineering, instrumentation support, administration (including operations costs for base facilities, fleet and mountain infrastructure), software, information systems, research, public information, safety and the directorate. The IDF is dedicated to renewal and improvement of instrumentation and telescope facilities, primarily executed as contracts to teams within the Partnership and spent over multiple years.

2.2.2 Financial Results for the Year 2018

Table 2.2.2-1 gives the summary of estimated O&M actual expenditures by expense category. Values through the end of 2018Q3 are actuals.

2018 Expenses in US$	2018 Budget Approved in Nov-2017	2018 Q3 Forecast	$ Variance 2018 Q3 Forecast vs Budget	% Variance 2018 Q3 Forecast vs Budget
WAGE & BENEFITS	18,611,278	19,184,459	-573,181	-3.08%
PERMANENT EQUIPMENT	767,500	645,146	122,354	15.94%
TRAVEL	1,299,934	1,253,367	46,567	3.58%
OTHER DIRECT COSTS	5,391,524	5,360,258	31,266	0.58%
INDIRECT COSTS	2,602,726	2,659,448	-56,722	-2.18%
TOTAL EXPENSE	**28,672,962**	**29,102,677**	**-429,715**	**-1.50%**
TOTAL EXPENSE LESS LABOR	10,085,139	9,918,218	143,466	1.43%

Table 2.2.2-1: O&M 2018 Actual vs Budget Expenditures; actual through Q3-2018

Notes: All values are in US $. *Detailed explanation follows:*

1. **2018 Budget approved in Nov 2017:** 2018 O&M budget approved by the Gemini Board in Nov-2017 (see 2017.B board resolutions).
2. **2018 Q3 Forecast:** Most recent annual estimated expenses for 2018

Table 2.2.2-2 shows the summary of estimated IDF actual expenditures by Instrumentation Development project as of Q3.

IDF PROJECT	2018 Budget	2018 Forecast	2018 Actuals as of 09/30/18	2018 Remaining Forecast ($)	2018 Remaining Forecast (%)
GHOST	$1,888,756	$813,430	$623,545	$189,885	23%
Instrument Upgrades	$278,899	$278,899	$64,827	$214,072	77%
AO upgrades (Altair, Canopus)	$211,640	$486,609	$104,765	$381,844	78%
SCORPIO	$2,060,152	$3,093,152	$2,159,574	$933,579	30%
GeMS-DM0	$260,000	$42,099	$399,142	($357,043)	-848%
Instr. Prog. Support and Maintenance	$175,903	$106,606	$0	$106,606	100%
GPI Relocation Study	$100,000	$100,000	$63,814	$36,186	36%
Visiting Instrument Program	$83,650	$83,650	$204,420	($120,770)	-144%
TOTAL IDF	**$5,059,000**	**$5,004,445**	**$3,620,087**	**$1,384,358**	**28%**

Table 2.2.2-2: IDF 2018 Actual vs Budget Expenditures; actual through Q3-2018

2.2.3 O&M 2018 Budget vs Actual Variance Analysis

Total O&M 2018 estimated expenses and commitments are $430k or 1.5% *greater* than the 2018 spending authority approved in the Board resolutions. This cash deficit is balanced from carry-forward that has accumulated during past years.

Overall, the key factors driving 2018 O&M spending changes are increasing 2018 labor costs due decreasing employee turnover ratio (e.g., less unplanned leavers) and non-labor cost changes such as decreasing expenses of the Longevity program and reduced spending on foreign travel, supplies, and professional training. Figure 2.2.3-1 presents the main elements of 2018 budget versus actuals variance (labor and non-labor).

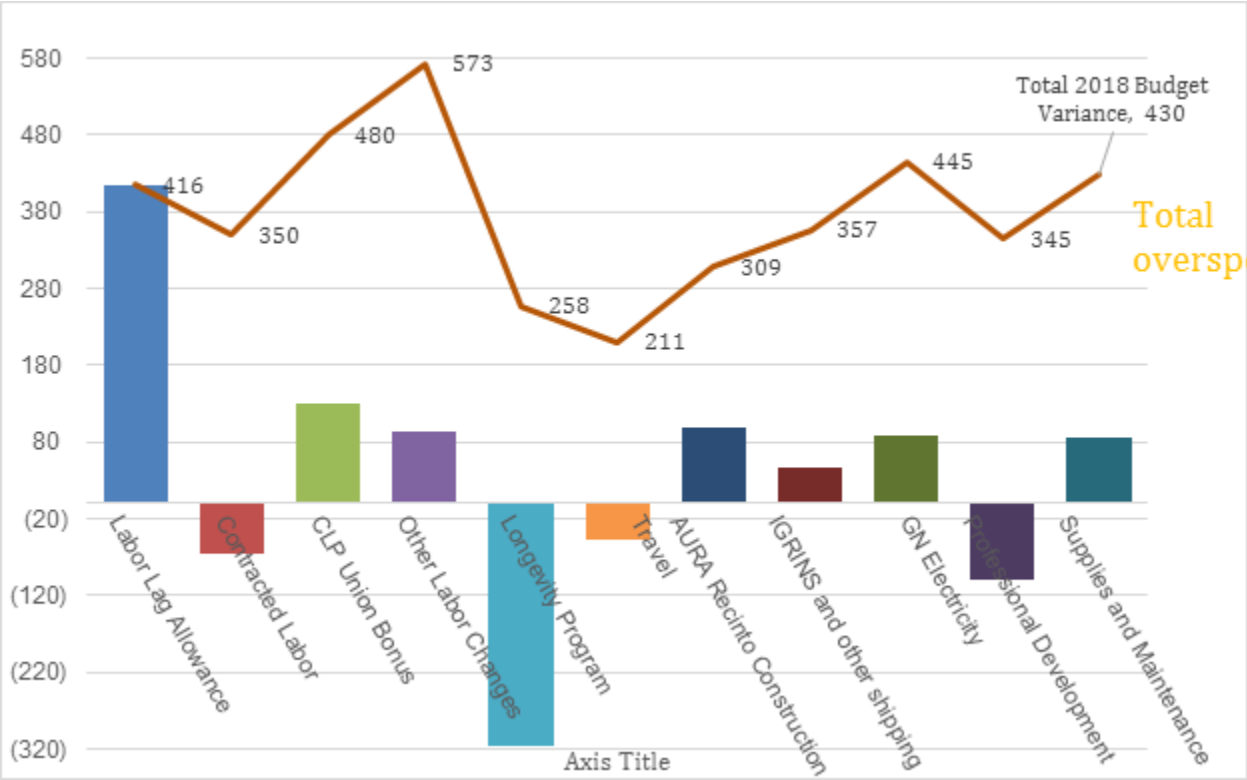

Figure 2.2.3-1: 2015 budget vs actuals variance analysis (labor and non-labor).

Expenses for 2018 are estimated based on actual expenses as of September 30, 2018, and best estimates of October-December 2018 O&M spending. Variance of 2018 estimated spending versus 2018 budget of 429,715 represents an overage of 1.5% of the approved 2018 budget, which is within the spending authority that the Gemini Board granted to Observatory management.

The summary of IDF 2018 budget versus actual expenditures is shown in Table 2.2.3-1 above and Table 2.2.3-1 below presents the drivers of 2017 IDF budget over/under spending.

IDF Project	Over / Under Spending Comments
GHOST	GHOST spectrograph schedule has continued to slip over the past 6 months and this has caused 2018 spending to slow down vs 2018 Forecast. A key step developed in 2018 for this project has been that NRC took over the subcontract management from AAO. Two large expected milestone payments associated with Integration and testing may slip into 2019.
Instrument Upgrades	Project Status: RAMSES: Expected to complete in 2018. GPOL: Project started in 2018. Team will deliver a feasibility report and renovation plan in 2018. GNIRS IFU: Contracts negotiated and awaiting NSF approval.

AO upgrades (Altair, Canopus)	This account funds small to medium adaptive optics upgrade projects. Currently, Gemini has two active projects.
	Project Status: The ALTAIR RTC Upgrade project is currently in its planning stage. By 2019 we expect to have decided on a path and approach.
	Replacement of GeMS NGSWFS with a modern sensor to reduce maintenance requirements and increase sensitivity and sky coverage. The GeMS NGS2 project is in its build phase and we expect to complete and close this project by the end of 2018.
SCORPIO	SCORPIO (formerly known as OCTOCAM) is an 8-band optical/IR imager and spectrograph being led by the Southwest Research Institute with partners at the Instituto de Astrofísica de Andalucía, FRACTAL SNLE, and George Washington University.
	Project Status: The project is currently in the design phase and expect to complete the design phase in Q2 2019. We expect to commission the instrument by the start of 2023 as planned.
GeMS-DM0	Gemini will provide a new deformable mirror for GeMS to replace the failed third deformable mirror (DM0). Deformable Mirror GeMS DM0, DM4.5, and DM9 are conjugated at 0, 4.5, and 9 km. The new mirror will serve as a spare for the two currently used DMs and will eventually be installed as the planned third DM for GeMS. Xinetics completed the mirror and Cambridge Innovations is giving the final touches to the electronics. Once fully done, we will work with both vendors to complete integrated testing by 2018 year's end. We expect this project to close in 2018.
Instr. Prog. Support and Maintenance	The Instrumentation Program Support and Maintenance account currently covers generic program (versus project specific) expenses including site travel, oversight meeting travel, conference travel and, small hardware items and small consumables required for day-to-day progression of the division, such as specialized software, books, consultancy contracts etc.
	Account Status: No travel costs against this account have been booked for CY2018. Site travel, conference travel and professional development travel were budgeted in other IDF and O&M accounts, thus, no charges expected for this account in 2018.
GPI Relocation Study	We expect to complete the GPI Relocation Study project in CY2018.
Visiting Instrument Program	Visiting instruments provide a cost-effective means to bring new capabilities to Gemini. A Visiting Instrument is one that was designed and built by another organization and is temporarily made available for use on one or both Gemini telescopes via an agreement between the instrument's owner and Gemini Observatory through the Visiting Instrument Program.
	Project Status: There are two major visiting instruments being developed specifically for Gemini's Visiting Instrument Program: MAROON-X and GIRMOS. Gemini has a contract with the University of Chicago to build an interface for MAROON-X to adapt the instrument for the Gemini North telescope. We expect to close out this contract in early 2019.
	The GIRMOS collaboration has independent funding to progress the instrument, and Gemini will help them with some labor support.

Table 2.2.3-1: IDF 2018 budget over / under spending drivers

2.3 Organization and Staffing

Gemini has currently 171 Full Time Equivalent (FTE) employees, with 51.5% of the staff members based at Gemini North and 48.5% at Gemini South. Table 2.3-1 shows the staff distribution by Division.

FTEs by Division	North	South	Total
Administration	8	6	14
Development	9	6	15
Operations	53	61	114
Deputy Director	1	1	2
Portfolio Management Office	2	1	3
Chief Scientist	9	6	15
Directorate	6	2	8
Total	**88**	**82**	**171**

Note: Includes vacant positions
Table 2.3-1: 2018 Staffing

3 Science and Engineering Operations

3.1 Regular Operations

Regular day-to-day and night-to-night Operations is the Observatory's top priority. This includes the following items. Specific updates from the year are given as sub-bullets. Items with no additional comments were addressed or accomplished as planned.

- *Maintain the instruments and telescopes in working order consistent with the requested science time on sky; monitor performance and take remedial action as needed.*
    - At Gemini South, we installed mirror-cover vibration monitoring system designed for BFO and already installed in the North. We also installed a full vibration monitoring system, with accelerometers distributed around the telescope, and controlled by a Linux PC. An identical system will be installed at Gemini North in early 2019.
- *Run the International Time Allocation Committee (ITAC) process to combine the national TAC results into an executable queue and visitor program consistent with available time, conditions, and instrumentation.*
- *Support the user community (in conjunction with the NGOs) in preparing their observations for the telescope.*
- *Provide web-based documentation suitable for PI reference on instrumentation, software and Observatory processes.*
    - We have made steady progress on the web page redesign, described in more detail in **Section 4.1**.
- *Execute queue observing programs on behalf of the community as required; currently this equates to more than 80% of the observing.*
- *Support visiting observers in their execution of their own and others' programs on the telescopes.*
    - In addition to visiting instrument blocks, we hosted visiting observers on numerous occasions in the 2017B and 2018A semesters:

- 2017B GN: 4 Classical, 3 Priority Visitor (PV), single extended KASI block
- 2017B GS: 2 Classical, 4 PV, 2 KASI blocks
- 2018A GN: 3 Classical, 2 PV, 2 short KASI blocks
- 2018A GS: 2 Classical, 2 PVs, 1 KASI block plus IGRINS

- *Ensure integrity of data (headers & quality control information) entering the Gemini Observatory Archive.*
- *Support visiting instruments as needed and as possible.*
    - This year at Gemini South, we supported DSSI, Phoenix, and the extended visit of IGRINS; in the North, we commissioned 'Alopeke and supported the second visit of POLISH2.
- *Propose and execute continual improvements in instrumentation, telescope, and enclosure to maintain performance levels.*
- *Propose and execute continual improvements in operations software on behalf of the community and for internal usability, to maintain performance levels.*
    - Developments in the major OCS upgrades project are detailed in **Section 3.4.1**.
- *Propose and execute continual improvements in operations processes on behalf of the user community, with guidance and input from the appropriate committees.*
    - We completed a study of the negative impacts of balancing the Participants' executed telescope time, and gained the agreement of the Gemini Board to discontinue the practice. We now balance the allocated time and make best efforts to complete programs in the queue.
- *Provide expertise and input to the Development Division in carrying out major enhancements of instrumentation.*
    - Operations staff continued to take significant roles in various major development projects, including SCORPIO, GHOST and the various instrument upgrades projects.
- *To ensure economical operations and a consistent interface with the user community, maintain approximate symmetry between the processes, equipment, and staffing at the two Gemini sites.*
- *Staff the "third" and final level of a helpdesk to respond to queries from the user community. (The first two levels are: (i) NGOs, and (ii) instrument specialists at the NGOs.)*

A regular system of preventive and corrective maintenance supports the first requirement of maintaining the instruments, telescopes, and enclosures in working order. Preventive maintenance is carried out at the summits on a regular schedule (daily, weekly, etc. depending on the system) using a system of work orders. More major items requiring additional staffing are handled by planning on a variety of timescales. A central list of major maintenance work is held by the Heads of Engineering Operations and is discussed weekly among engineering managers and at the quarterly planning meetings. Items are tracked according to progress or completion, and new needs are evaluated before adding to the list and determining a possible schedule.

3.1.1 Operations Metrics

The data in this section refer to demand and performance in the last two complete semesters: 2017B and 2018A, given in some cases in context of recent years. First, Figure 3.1.1-1 shows program

completion rates in the regular semester queue. We show the "80% completion" statistic approved for discussion by the STAC and Board, and exclude Target of Opportunity (ToO) programs and those observed in blocked schedule (as we have much less control over completion rates of such programs).

Figure 3.1.1-1: Completion statistics for GN and GS. 2017B and 2018A are represented by the bars at the right of each group. Bars represent the fraction of programs achieving 80% completeness; white dots represent the fraction achieving 100%. Band 1 completion rates in the final two semesters will increase as all Band 1 programs have "persistence".

Recent Semesters at both sites have suffered from greater than usual losses of time to weather (particularly at Gemini South). Program completions at Gemini South have continued to rebound from a low point in 2015. Weather misfortune has switched to the North, for which 2018A was the worst semester in a decade.

3.1.2 Telescope Time Usage

Table 3.1.2-1 and Table 3.1.2-2 show top-level time and fault distributions and science usage in the most recent two complete semesters.

Semester	Site	Science	Engineering & Commissioning	Weather loss	Fault Loss	Shutdown
2017B	North	48%	1.8%	34%	2.9%	13.1%
	South	57%	4.2%	30%	4.5%	4.4%
2018A	North	43%	1.5%	54%	2%	0%
	South	57%	4%	34%	5%	0%

Table 3.1.2-1: Overall operational statistics, semesters 2017B and 2018A

Semester	Category	North	South
2017B	Computer/Software	5%	8%
	Instruments & AO Facilities	30%	31%
	Telescope and enclosure	66%	61%
2018A	Computer/Software	19%	8%
	Instruments & AO Facilities	53%	38%
	Telescope and enclosure	29%	54%

Table 3.1.2-2: Categorized fault distribution, semesters 2017B and 2018A

3.1.3 Regular Semester: Oversubscription and Demand

Oversubscription rates in the regular Semester process are shown by partner in Figure 3.1.3-1. These rates are calculated as the ratio of the total time PIs request to the total available science time, which is 80% of the calendar time because we make allowance for weather losses in filling the queue. The distribution of time requested by instrument is shown in Table 3.1.3-1. The most significant difference from previous years is the displacement of GMOS-S as the most-used instrument at Gemini South in Semester 2018A; this was due to the scheduling of a large amount of time with the visiting high-resolution infrared spectrometer, IGRINS.

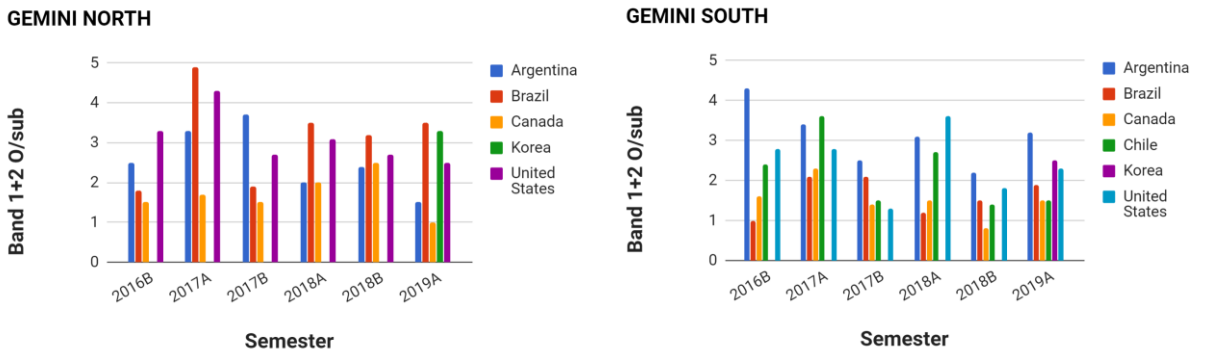

Figure 3.1.3-1: Oversubscription by partner over the last three years. 2019A values are provisional as submissions have only just been made. Note that Chile has access only to the South and Korea appears only in the final group.

Table 3.1.3-1: Demand for instruments

	North		South	
	Instrument	**Fractional**	**Instrument**	**Fractional**
2018A	GMOS-N	48%	IGRINS	35%
	GNIRS	17%	GMOS-S	33%
	NIRI	9%	GSAOI	13%
	GRACES	6%	FLAMINGOS-2	11%
	NIFS-Altair	8%	DSSI	4%
	DSSI+Alopeke	5%	GPI	3%
	TEXES	3%		
	POLISH2	2%		
2017B	GMOS-N	43%	GMOS-S	58%
	GNIRS	26%	FLAMINGOS-2	16%
	GRACES	12%	Phoenix	11%
	POLISH2	8%	GPI	6%
	NIRI	5%	GSAOI	5%
	NIFS	5%	DSSI	4%
	DSSI+Alopeke	1%		

3.2 Science and Engineering Operations Core Projects and Goals

In addition to the above regular operations support, in 2018 we will commence or continue several projects to improve longer-term sustainability impact or to improve service to users.

3.2.1 Real-time Software Upgrades

The real-time control systems for Gemini were designed and built in the 1990s using state-of- the-art software tools and operating systems of that time. These systems are in use every night, but they have not been kept up to date and are now obsolete. We are past the mid-point of a project to upgrade the control software and operating systems of the telescope. During 2017, we successfully completed the first part of these upgrades and we are now working on upgrading the final set of systems. With the completion of this project, Gemini will have standardized the development tools, libraries, software and operating systems of the core telescope control systems, extending their lifetime and greatly simplifying future operations, maintenance and upgrade work. In addition, updated standards and procedures will be generated, so these systems can be kept current for years to come. We expect this work to be finished by Q3/2018.

The Real Time Software Upgrades project was successfully completed in October 2018. All the telescope control systems within the project scope have been upgraded to use RTEMS (https://www.rtems.org/), an open-source real time operating system, and EPICS (https://epics-controls.org/) - the core control software framework used at Gemini - was upgraded to a modern, stable version.

In addition, we upgraded all the software libraries used by our control software systems and we have modernized and standardized the software development tools used to develop and maintain these

systems. We produced new software standards for coding, development and maintenance as well, so these systems can be kept current for years to come. This is the most ambitious upgrade we have done to our control software systems since Gemini's commissioning, and it paves the way for future obsolescence mitigation plans, including future hardware upgrades.

3.2.2 LSST Fiber Optic Network Connection

The LSST fiber optic between La Serena and Cerro Pachón is physically in place. We are now in the process of procuring the appropriate network electronics to connect the Gemini network to it. We expect this to be our default link to the summit by the end of Q2 2018.

Gemini successfully moved operations to the fiber optic link at the end of May, using two of the four available dedicated channels that are set aside for Gemini. Leveraging the state-of-the-art network equipment that the observatory operates, through minimal investment and modification to the general infrastructure, we are able to deliver two 10Gb/s links between the summit and the base. Once LSST, CISS and REUNA have acquired additional transceivers for their core backbone DWDM equipment, we will immediately upgrade even further and occupy all available channels, providing a total of 40Gb/s between the summit and the base. Additionally, we have two automatic failover backup links, one operated through a third-party commercial service provider, and the other through AURA/CISS.

3.2.3 LSST Follow-up System Integration

Gemini is involved in the planning of the NOAO-led LSST follow-up system. The first practical stage of the work is to link Las Cumbres Observatory with the ANTARES broker at NOAO, and the SOAR telescope on Cerro Pachón. Our involvement in this stage of the work is to ensure that what emerges is not incompatible with future integration of Gemini into the same network. In parallel with this we anticipate commencing a Gemini internal project in Q2 of 2018, aimed at setting requirements in parallel with the first stage described above, with a view to completing that by the end of Q3. We expect work on the actual integration to commence, some of it in parallel with the OCS upgrade, in Q4 2018.

This work commenced as a project in mid-year, 2018. Recognizing the importance of the technical link with Las Cumbres Observatory, we held discussions in October with Las Cumbres software engineers, science staff and management. We expect to converge on the overall technical solution by Q1 2019 at latest.

The project has now been augmented by funding from the GEMMA award; we expect to use those funds to support four (4) FTE of software engineering effort, to:

1. provide APIs between Gemini and other facilities in the follow-up network,
2. accelerate the provision of automated pipeline data reduction for long-slit spectroscopy, and
3. produce a software scheduler capable of regenerating the observing queue for both Gemini telescopes when an interrupt observation is received from the network or a Target of Opportunity is inserted into the observing plan.

3.2.4 Science Operations Improvements

As shown in the Annual Progress Report for 2017, some items of the first round of Science Operations Model Upgrades remain to be completed, and these will take priority over starting new items in 2018. Specifically: (i) in May 2018 we expect to give the final report to the STAC/Board on the effect of balancing allocated time rather than executed time; (ii) we will fully specify the way in which

communications on program support will be stored within the new OCS; (iii) we will continue to welcome visits from new NGO staff members; (iv) the external web-page redesign will start in Q2, following the provision of policies and standards via closeout of the Digital Governance implementation plan (see Section 4.1); and (v) we will resume work on the external helpdesk, building on the version that was implemented for the internal desk. It is possible that this will be completed by year end, 2018. One item from the first round which will receive initial effort is Adaptive Queue Planning, which will be the subject of requirements gathering both internally and in conjunction with our involvement in the LSST follow-up System. Coding will not begin in earnest within 2018. One additional item that was not included in the first round of review outcomes is to rewrite the Gemini mask-making software (GMMPS) in a collaborative project with other AURA observatories. Since this involves external effort, we do not specify a completion date, but have already had initial discussions with SOAR and CTIO and may complete requirements analysis by mid-year 2018.

We presented a final report on the effect of balancing allocated time rather than executed time to Governance in the May 2018 meetings. It was accepted, with a resolution requesting that we continue to track imbalances while not attempting to correct for them.

We have not completed work on how communications with PIs will be handled within the new OCS; however he have a functional prototype as a result of supporting the US LIGO follow-up programs in 2018B and 2019A. This may not be the ultimate technical solution but it satisfies most of the requirements and so is a sound basis for proceeding to software development.

We continue to welcome visits from new NGO staff members (described in more detail **Section 4**).

Redesign of the external webpage commenced in Q2 as planned (described in **Section 4.1**).

It was not possible to resume work on the external helpdesk, thus we moved commencement into next year.

3.2.5 Gemini North Energy Savings

In 2018 we will complete the GN Energy Savings Project, including: (a) Upgrade the GN summit chilled water system with an air cooled fluid cooler and a high efficiency modular chiller and; (b) Replace seven existing HBF AC systems with eight new high efficiency AC systems. We anticipate completion of this project in 2018Q2.

The contractor, in collaboration with Gemini staff, completed installation of all major equipment associated with the Gemini North Energy Savings project. The new HBF AC systems are in normal operations. We anticipate having a UV light treatment of the airflow installed to mitigate mold-buildup in the systems. We have identified the need for supplemental cooling for the computer room in order to extend the run-time on UPS power for the computer room. Work on both of these items will stretch into early 2019. The GN summit fluid cooler is in normal operations. Installation of the new GN summit modular chiller was completed and a successful factory-startup of the system was performed. Work to reconfigure our alarms-system correctly for the new chiller is pending, as is the final electrical inspection from the County. To enable the fluid cooler to maintain instrument cooling during a power failure, while running on UPS power, we will install a smaller booster fan. This work will take place in early 2019.

3.3 Information Technology Services (ITS)

Information Technology Services (ITS) supports every area of Gemini Observatory operations with its responsibility to provide, maintain, and upgrade software and hardware for use by the staff and visitors

of Gemini. This includes providing computers to new staff and upgrading obsolescent computers while also maintaining high levels of security for Gemini's systems. Additionally, in 2018 we have projects to upgrade VMware systems, replace firewall components, increase NetApp storage, and implement additional network upgrades.

The larger project within ITS in 2018 is to rebuild the Plan for the Week and the HelpDesk. This work began in 2017 with the rebuild of the internally facing HelpDesk. In 2018, we will complete this project, providing a more efficient, flexible, and maintainable system for the future.

Leveraging the combination of the enterprise IT infrastructure such as the VMware systems, NetApp storage and core networking components, ITS also provides services dedicated to delivering the scientific output. This includes system redundancy provisioning, standardized system configuration, scientific data collection, control system network management, operational and scientific data storage management and backup services, operational system security management and oversight and system monitoring. ITS also provides development environments for computing systems that are deployed in a state of ongoing change, experimentation, proof-of-concept, or evaluation.

These services and systems are protected under a rigorously maintained cybersecurity framework including cybersecurity assessments, user awareness training, policy administration, and network monitoring.

With a focus on the needs of internal Gemini users in telescope fault management and weekly and daily planning activities, ITS and Gemini directorate agreed to split the Plan for the Week upgrade project into individual components. This enabled a redirection of ITS efforts to the rebuild of the Telescope Fault Report system. The project team successfully deployed the upgraded Fault Report system early December after completing integration and compatibility testing. All previous internal system linkages were maintained through APIs to ensure a smooth transition and to improve reporting capabilities.

The postponed Plan for the Week and externally facing HelpDesk rebuild projects will be done during 2019, in cooperation with the SUSD and Engineering departments.

Early 2018 saw the completion of final work-packages and closure of the VMware cluster upgrade project, which was carried out in alignment within the context of the Gemini hardware lifecycle framework. This latest upgrade included a complete replacement of server hardware and a considerable increase in both CPU and memory on all clusters, providing a sustainable platform for both Astronomy and Business IT requirements throughout the next four years.

Also aligning with the Gemini hardware lifecycle framework, ITS completed the project to upgrade and expand Gemini's data backup infrastructure at all four sites (Cerro Pachón, La Serena, Maunakea, and Hilo), implementing new hardware and improved software services. This upgrade saw a significant increase in usable backup storage capacity as well as the improved ability to leverage more efficient off-site backup strategies to protect crucial system and scientific data.

Finally, in response to feedback obtained through an engagement with TrustedCI, ITS completed a reevaluation and subsequent upgrade of the Gemini-wide centralized syslog application to provide a manageable and trusted source of information in the event of a cybersecurity incident or system failure.

3.4 Software

In 2018, we will continue with the Observatory Control System (OCS) upgrade and Telescope Control Console (TCC) software upgrade. While we will prepare for the Adaptive Queue planning project in 2018, significant work on that project will not commence until 2019.

The Software group provides software expertise to develop, sustain and maintain telescope and instrument software systems. The team focuses its effort in two main areas, namely real-time/control systems and high-level software.

The software group is composed of a core of real-time/control and high-level staff programmers. These trained professionals feature skills sets that widely differ from high-level programmers. Real time programmers use different tools and solve different problems than the high-level programmers. Due to the nature of the systems and the problems the group addresses, the focus on each one of these activities varies from high-level to real-time activities. The real time activities have a greater maintenance orientation (as all the telescope systems and instruments development software is outsourced) and have a big impact on telescope and instruments performance. The high-level work affects a wider audience (internal and external users) and emphasizes development to a greater extent. The high-level tools are developed in-house, as they are custom made to satisfy specific needs of the telescope operation and observing model.

During 2018, in addition to regular software operations support, the main focus of the high-level software engineering team has been on the OCS Upgrades Program, with a major goal of upgrading all Gemini high-level software tools used for preparation, planning and execution of science programs to a modern, supportable platform, and at the same time prepare Gemini for its role in the next decade. The Real Time Control software engineering team, on the other hand, has focused on completing a major upgrade to the telescope control software. We provide an update on these activities in the next sections.

3.4.1 Observatory Control System (OCS) upgrade

Objective: *The next phase of this multi-year program will provide a new integrated system for submitting and preparing proposals and for planning and executing the resulting observations. The first projects will focus on enabling communications between the tools employed at various stages in the science program lifecycle. During 2018, we expect to complete the concept of operations for this upgraded system and finalize the core software infrastructure that will support it. In addition, the first prototype of this system will be available for user verification and feedback.*

Milestones:

- *Observatory Control System Concept of Operations updated - Q1 2018*
- *Core OCS software infrastructure completed - Q3 2018*
  First tool prototype, with editors for instrument and their sequences - Q3 2018
- *Begin software modeling work to support OCS planning tools, including Adaptive Queue Planning and LSST integration - Q4 2018*

In 2018, the OCS Upgrades project was restructured as a Program, including the following projects in it:

1. OCS Science Platform: This project provides the infrastructure and capabilities to build the new system, along with the core functionality to support proposal submission, program preparation, planning and execution.

2. New Sequence Executor. This project provides a web-based, client server sequence executor, with the capability of running multiple sequences at the same time, and with the ability of having multiple clients connected at the same time. In addition, it creates the necessary software components to collect information that is generated during program execution, in particular execution events, that are used by tools like data manager and obslog
3. TCC Upgrades. This system replaces the existing TCC with a modern, easier to use Telescope operator console.
4. Assisted/Adaptive Queue Planning. The adaptive queue planning system is built on top of all the OCS Core infrastructure and allows to create night-time plans based on changing conditions. This is critical to support an increased number of target of opportunity events, once LSST starts its operations

A revised plan to account for this was submitted and approved to move this work forward. A preliminary review of the Concept of Operations was done in April 2018, with a final review completed in August 2018. This review presented the main science requirements and use cases, and the initial software architecture proposed to be used in the program.

The focus in 2018 was put in the initial two projects, the OCS Science Platform and a new Sequence Executor. Significant progress was made on the software infrastructure to support the Science Platform. In particular, the definition of a new relational database for OCS, software models for instruments, sequences and target representation were completed in July 2018.

The new Sequence Executor has made great progress in 2018 and it is under user testing at both sites. We expect this system to be in full regular operations by Q2/2019. User interface frameworks used in this project will be foundation for the other projects in this program. Due to lack of resources on user interface development, no progress was made on prototyping user interfaces for the Science Platform as we were originally planning.

The TCC Upgrades and Adaptive Queue Planning were moved to 2019 and 2020, respectively. However, with the GEMMA award, two new high-level software engineers will be added that will enable us to accelerate work on adaptive queue scheduling and move towards integrating Gemini with the LSST follow up network. We expect to start working on these aspects of the program starting next year.

3.4.2 Telescope Control Console (TCC) software upgrade

Objective: *An improved version of the TCC that simplifies and rationalizes the user interfaces to maximize observing efficiency and minimize errors, while reducing the longer-term costs of maintaining the TCC software by using modern software technologies and delivering a test suite to perform regression testing of the tool.*

Milestones:

- *Complete Phase I in 2018 (Study and document the current configuration at both sites and define top-level requirements for the system).*
- *Agile Software development and testing effort to start in Q4/2018 and extend throughout 2019, with initial operations rollout by end of 2019.*

As indicated in the previous section, the TCC Upgrades was re-scheduled to 2019, so no major work was executed on this project in 2018. The resources required for this project will be freed up once the new Sequence Executor work is completed in 2019.

3.5 Longevity

For 2018, the primary goal of the Infrastructure Sustainability and Scientific Longevity Program will be to carry out the highest priority items identified in the 2016 Obsolescence Plan. In addition, the Program will be expanded to meet the new objective - to adapt the Observatory to remain scientifically relevant beyond 2025 by renewing and upgrading our facilities. To meet the new objective, we will work with managers and staff in all departments, not only engineering and computing, to find areas where the efficiency of the telescope may be improved, daily operations streamlined, and hardware, software and processes may be updated proactively based on input from experts in all areas of the Observatory. All projects undertaken in the Longevity Program will be carried out in coordination with, and with the assistance of, staff in the departments affected by any changes.

The tasks with the highest priority for 2018 are as follows:

- *Repair or replace components needed to maintain Altair, in coordination with the Development group's planned RTC upgrade*
- *Procure and commission updates and upgrades to the A&G systems, based on the outcomes of 2017 Options Studies*
- *Procure computing backup infrastructure*
- *Procure and test replacements or upgrades to components identified in ongoing Options Studies for synchrobus, M2 central electronics module, and SDSU/VME interfaces*

In 2018 the primary activities in the Infrastructure Sustainability and Scientific Longevity Program were:

- Procurement of improved computing backup infrastructure
- Options Studies carried out to identify viable replacements for synchrobus, M2 central electronics module, and SDSU/VME interfaces
- Re-evaluation of effort and resources required for necessary A&G upgrades, producing a feasible plan for 2019
- Determination that Altair updates should be deferred given that many of the small items scheduled for refurbishment have been evaluated and determined to be viable until such time as the plans for GNAO and related RTC have been finalized.

3.6 Science Research

The Gemini Observatory values the research activity and results of Gemini staff. Staff research should advance the Observatory mission, including the recruitment and retention of staff who have skills that the Observatory requires. Effort toward research requires planning and accountability. We support staff initiatives to promote the research environment and culture at both sites. In 2018, we will continue to internally review and maintain individual research plans.

In 2018, Gemini Observatory's scientific staff continued their scientific research, resulting in numerous publications and conference presentations. See Appendix B for a listing of staff publications, both refereed and non-refereed and Appendix F for a list of invited talks by science staff.

4 Science User Support

The Science User Support Department (SUSD) advocates for the users and enables Gemini Principal Investigators to produce world-class scientific results in a timely manner. The SUSD leads post-observing user support. This begins with maintaining the Gemini Observatory Archive (GOA). Its staff maintain a data reduction package for the user community that enables astronomers to remove instrumental signatures from data obtained using Gemini facility instruments, and they support users in its use (mostly through the use of the Helpdesk and Data Reduction User Forum. The SUSD maintains communications between the Observatory and the National Gemini Offices and ensures that NGO staff members receive appropriate training as well as facilitating the annual meetings of the UCG.

In 2018, four new NGO staff members (Mateus Angelo from Brazil in January, Joel Roediger from Canada in February, Ho-Gyu Lee from Korea in May, and Paulo Lago from Brazil in December) visited Gemini for training that will allow them to provide user support throughout the science program lifecycle from proposal through data reduction (most often with specialization in a particular instrument). Additionally, we formally documented our User Support Model to help new Gemini and NGO staff understand each other's roles and responsibilities in supporting our users throughout the science program lifecycle. We also provided live user support at the national astronomical meetings of the Gemini Partnership including AAS in January, the Korea users meeting in February, and the joint SOCHIAS/AAA meeting in October.

We are collecting trackable and actionable feedback from Gemini users by using regular surveys. The short survey format (2-3 questions) is easy for our users and motivates a high level of participation (to date the response rate is between 33-75%). The questions are permanent so that answers can be compared over time. The surveys are timed to coincide with the four phases of the science program lifecycle (Proposal preparation, Observation preparation, Program completion, and Post-observing) and repeat each semester. Requests to participate are sent by email that direct users to web-based surveys. The results are analyzed every semester, and monitored long term. Actions taken in response to survey results so far include the creation of new PIT and OT tutorials, providing requirements to the OCS upgrades project (discussed in **Section 3.4.1**), as well addressing a few issues with specific programs that would otherwise have gone unnoticed.

The Gemini Observatory Archive (GOA) continues to operate with essentially zero unplanned downtime since its release December 2, 2015. There were two planned interruptions of service of approximately two hours each in August 2016 and 2017 to release new features and bug fixes. As of December 2018, we have 965 registered users (it is not necessary to register to access non-proprietary data). With site hits up to almost 40 million for to date for 2018, typical usage is approximately 3,400 searches and 8GB of data downloaded per day.

4.1 Creation of a New Public Website

Objective: *Transition from our current website, which is more like an ad-hoc collection of references, to a website that is User-Centric. This will involve restructuring the website at all levels, so it better addresses the needs of our stakeholders.*

Deliverables and Milestones:

- *Website concept including requirements for style and structure – March 2018*

- *Website prototype and testing report - August 2018*
- *New website - Jan 2019 (assessment and iteration continues through 2019)*

The decision to expand UX usability testing has resulted in the delay of the public launch from early 2019 to June 2019.

- Website concept including requirements for style and structure - June 2018
- Website prototype and User Experience (UX) usability testing report - Dec 2018
- Website maintenance standards and procedures - March 2019
- New website public launch - June 2019

The Gemini Digital Governance (DG) framework has been implemented. Digital teams meet regularly to discuss current and new work along with the impact of Digital Policies and Standards on content and applications. The Web redesign has undergone several UX usability tests with results that outperform the current website. DG working groups have been created to work on the Web redesign with an anticipated launch in June 2019.

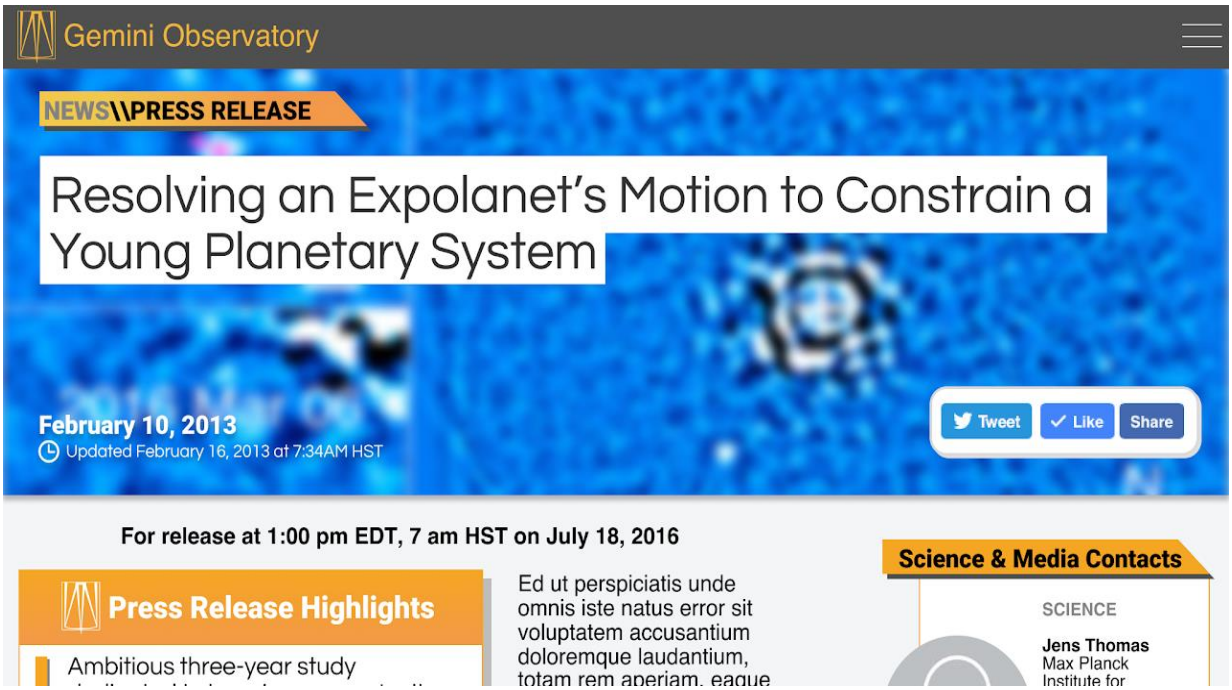

Figure 4.1-1: Prototype of a press release used during User Experience usability testing

4.2 Data Reduction Software and Documentation Development

Objective: *Python data reduction software for all facility instruments and increased science productivity based on Gemini science data. This multi-year project will remove our dependence on antiquated and soon to be obsolete IRAF and enable archive science.*

Deliverables and Milestones:

- *Final Gemini IRAF release to support FLAMINGOS-2 MOS - Mar 2018*

Delayed into 2019 due to mechanical issues with the on-instrument wave-front sensor required for commissioning of the MOS mode

- *FLAMINGOS-2 Data Reduction Cookbook release - Mar 2018*

Completed on time.

- *First DRAGONS (Data Reduction for Astronomy at Gemini Observatory North and South) release to support all facility imagers - June 2018.*
- *Real-time or next-day reduced imaging products available in GOA - Sep 2018*

Both delayed into 2019 due to resource shortage when a key staff member left the department and was not replaced until recently.

Additionally two new resources for data reduction were created. As the GMOS IFU mode requires the complicated data reduction, we have a new tutorial that aims to take a new IFU user through the steps that often cause the most confusion. Finally, advanced data reduction tips are now available to describe solutions to some of the more serious issues that arose due to problems with the Gemini Multi-Object Spectrograph (GMOS) instrument or detectors in imaging mode.

4.3 Gemini Science & Users Meeting 2018

Objective: *Bring together a large sample of the Gemini Users' community to present their science results, obtained from Gemini observations; update the community on current Gemini capabilities and future development plans.*

Deliverables: *The meeting will be held July 22-26, 2018, in San Francisco, CA. We plan to deliver a strong program of science talks with wide representation across science areas, participant nationality, etc. There will also be updates from the Observatory directorate and staff members about Gemini operations, proposal modes, current instrumentation, projects in development, and strategic planning. The program will include a conference dinner and poster session. The main long-term deliverable, lasting beyond the meeting itself, will be direct communication with, and stronger connection to, the Gemini user community.*

In July over 100 participants gathered in San Francisco, California, to share their recent successes with Gemini. There was a lot to celebrate, including our new partnership with the Republic of Korea. With the Gemini Planet Imager Exoplanet Survey (GPIES) coming to a close, we also enjoyed a full session on results from GPI and a discussion of the future evolution of the instrument. Other exciting scientific results reported (the conference proceedings[5] are available online) included details about 'Oumuamua —the first known interstellar asteroid — and the first electromagnetic counterpart to a gravitational wave detection from a neutron star merger. In addition to sessions on new instrumentation (both facility and visiting), we discussed synergies with other observatories, such as the Large Synoptic Survey Telescope and the James Webb Space Telescope, as well as a strategic plan for Gemini as we move forward into the era of multi-messenger astronomy and transient follow-ups.

Additional activities at the meeting included a tutorial on GMOS IFU data reduction, "Under the Hood" talks on the practical aspects related to running a Large and Long Program, and a Speed Collaboration workshop. The Gemini User's Committee also held its annual meeting in conjunction with this conference.

[5] http://www.gemini.edu/seg2018/program/#program

5 Instrumentation and Facility Development

5.1 GHOST

Objective: *Provide Gemini a workhorse instrument capable of quality optical high-resolution spectroscopic observations as a response to community input, STAC recommendations, and Board directives.*

Deliverables: *The major deliverable is a fully-commissioned high-resolution optical spectrograph to the Gemini community ready for operation.*

2018 Milestones:

- *Cassegrain unit shipped to Gemini South -* ***DONE***
- *Cassegrain unit and fiber bundle integrated at Gemini South -* ***DONE***
- *Pre-delivery spectrograph acceptance testing* ***- OUTSTANDING***

A team including members from the Australian Astronomical Observatory (AAO-Macquarie), the Australian National University (ANU), and the National Research Council Canada-Herzberg (NRC-H) is building the Gemini High-resolution Optical SpecTrograph (GHOST) for delivery to Gemini South.

The Cassegrain unit team at AAO shipped the fiber positioner before the end of 2017. This was tested on-sky at Gemini South in early February, and again in the last week of November.

In 2018, the spectrograph work encountered a number of significant delays. For instance, the manufacturing and testing of the white pupil relay mirror hit difficulties at the beginning of the year, soon reaching the project's critical path in Q1. This resulted in extending the timeline such that the pre-delivery spectrograph acceptance testing is now expected in Q2 2019.

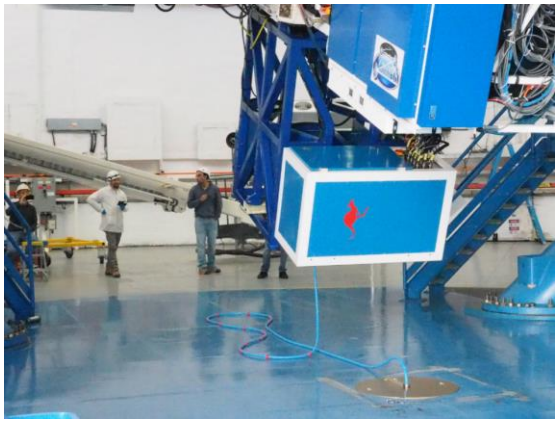

Figure 5.1-1: The GHOST Cassegrain unit mounted on the telescope instrument support structure with optical cable running through the dome floor down to the pier lab.

The spectrograph team now has all the vendor-sourced optics in house. The difficult-to-test white pupil relay fold mirror is now tested and verified. Now fully in control of their schedule, the team is working hard to complete the spectrograph, detector systems, and enclosure.

The Cassegrain unit team is finalizing the slit viewer and science optical cable and plans to ship them to the spectrograph team in 2019Q1. After delivery, expected early next year, the Cassegrain unit and spectrograph teams will work together to integrate them with the spectrograph.

The software team has competed the software development that does not require the assembled spectrograph to complete. The remaining work is largely related to data reduction.

GHOST is now scheduled to complete commissioning at Gemini South in 2020A.

5.2 SCORPIO (formerly OCTOCAM)

Objective: *Provide Gemini a highly capable, broadband imager/spectrograph that simultaneously and continuously covers wavelengths from the optical to infrared, focused on supporting LSST-inspired observations at Gemini South.*

Deliverables: *The major deliverable is a fully-commissioned broadband imager and spectrograph to the Gemini community ready for operation.*

2018 Milestones:

- *Finalize new management structure* ***- DONE***
- *Complete Preliminary Design Review* ***- DONE***
- *Start Critical Design Stage* ***- DONE***

A team, including members of the Southwest Research Institute (SwRI: prime contractor, management, electronics, detectors, and final integration and testing); the Space Telescope Science Institute (STScI: Principal Investigator); FRACTAL (opt mechanical work packages); George Washington University (Project Scientist and data reduction); and Johns Hopkins University (JHU: engineering support and slit viewing camera study), is designing and building an 8-arm, optical to infrared imager and spectrograph called SCORPIO, for Gemini South.

Massimo Robberto joined the project in March 2018 as the new PI. Massimo came from the Space Telescope Science Institute where he is the Branch Manager for JWST's NIRCam. He was also the PI for the Gemini GMOX feasibility study and was the Instrument Scientist for the infrared channel of the Wide Field Camera 3 onboard the Hubble Space Telescope. He conceived SPACE, a dark energy mission selected by the European Space Agency for the Cosmic Vision 2015 – 2025 plan (now part of the Euclid mission) and is also working on the ATLAS Probe satellite, under study for the 2020 Decadal Survey and the SAMOS spectrograph for SOAR. He built the MAX camera for the UKIRT telescope in Hawaii. Massimo's main research field is star formation, the Orion Nebula in particular.

The SCORPIO Preliminary Design Review was held 4-5 April and the stage closed out in May with the Critical Design Kickoff meeting, taking place on 21 May. The design is well into the Critical Design Stage and the review is currently scheduled to occur in March 2019. We will assess team readiness for the Critical Design Review in January.

5.3 Gemini North Toptica Laser Guide Star

Objective: *This project replaces the non-functional Gemini North laser with a Toptica laser identical to that installed for GeMS at Gemini South.*

Deliverables: *The major deliverable is a fully-commissioned Toptica Laser for Altair to the Gemini community ready for operation.*

2018 Milestones:

- *Install on telescope*
- *Complete commissioning*
- *Make laser available to users*

The new Gemini North Toptica Laser was installed on the telescope and commissioned in Q3. The system was released to operations in Q4 and will be available to users in 2019.

5.4 GPI Relocation Studies

Objective: *Determine if moving GPI to Gemini North after GHOST arrives at Gemini South is worthwhile.*

Deliverables: *The first deliverable is a feasibility study report that outlines what is needed to move GPI to GN and explores the scientific value of doing so. Depending on the results of this report, we may also commission an upgrade study that outlines what upgrades we should consider during the move to make GPI more productive at Gemini North. If we decide to move GPI, it would be no earlier than 2019 before we do so, possibly later, depending on the progress of the GPIES and any other outstanding GPI campaigns and the results of these studies.*

2018 Milestones & Decisions:

- *Complete relocation feasibility study*
- *Determine whether or not to commission an upgrade study*

The complete GPI relocation study determined that a relocation to Gemini North is feasible and laid out several upgrade options to make GPI a more compelling addition to a future Gemini North instrument suite. The GPI team is currently working with Gemini Observatory to consider possible avenues for funding such upgrades.

5.5 Visiting Instruments

Gemini Observatory has a strong commitment to meeting our community's instrumentation needs. Through our Visiting Instrument Program, we have the ability to provide unique instruments, some of which have broad appeal and others that are most applicable to niche areas of science or those that might be high profile at any given time, for a fraction of the cost of Facility Instruments.

Objective: *Provide Gemini users with a wider range of instruments for their science and the opportunity to pursue their science with specific instruments they can access as needed.*

Deliverables

The program outcomes will be measured in terms of utility to the community (i.e., the number of science proposals submitted and accepted in any given semester) and in terms of maintaining the scientific relevance of the Gemini telescopes (i.e., the number of publications and impact factor generated by Visiting Instruments.) There is a time lag between data taking and science publication of 2-3 years, and so monitoring the number of proposals will help to bridge this gap.

2018 Events & Milestones:

- *DSSI (GS) Observing Run - Q1 2018*
- *DSSI-2 'Alopeke (GN) Observing Run - Q1-Q4 2018*
- *IGRINS (GS) Commissioning - April 1-8, 2018*
- *IGRINS (GS) Observing Runs - April - July 2018*
- *HIPPI-2 (GN) Commissioning - Q2 2018*

- *GIRMOS Conceptual Design Review - Q3 2018*
- *MAROON-X (GN) Commissioning - Q4 2018*

Gemini accomplished all of the above Visiting Instrument milestones in 2018. See Error! Reference source not found. below for the percentage of time requested for each visitor instrument in recent semesters. Particularly noteworthy in terms of demand is IGRINS, the cross-dispersed immersion grating near-IR spectrograph provided by UT Austin and KASI. IGRINS was on Gemini South 50 nights in 2018A, covering both instrument PI and Gemini user community proposals. The instrument team supported the observations and reduced data products were provided directly to scientists. The remaining Visiting Instruments usually constitute about 15% of user demand per telescope per semester.

2017B	2018A	2018B	2019A
Phoenix 11%	IGRINS 35%	Phoenix 4%	Phoenix 9%
GRACES 12%	GRACES 6%	GRACES 6%	GRACES 5%
POLISH2 8%	TEXES 3%	POLISH2 3%	POLISH2 3%
DSSI 4%	DSSI 3%	DSSI 8%,	DSSI 8%
	‘Alopeke 7%	’Alopeke 6%	‘Alopeke 7%
			MAROON-X 1%
			GASP 2%

Table 5.5-1: Percent of time requested at each telescope per visiting instrument

In addition to the return visitors, 2018 included significant planning for future visiting instruments:

- MAROON-X, a high precision radial velocity spectrograph, is under construction at the University of Chicago. Originally designed for another telescope, MAROON-X required a Front End interface to attach to an instrument port, from which an optical fiber would feed the spectrograph in the pier lab at Gemini North. The thermally controlled enclosure was installed in the pier lab in July 2018, and the Front End was delivered and commissioned in December 2018. We expect the spectrograph itself to ship in Q1 2019, and hope to offer it to the community for 2020A
- GIRMOS, the Gemini Infrared Multi-Object Spectrograph, had their project kick-off meeting in December 2018, with participation from Gemini staff. They are now entering their Conceptual Design Phase, and planning a CoDR in Q2 2019.
- A new team representing the Galway Astronomical Stokes Polarimeter (GASP) have been in contact to make plans to visit Gemini South. They have a preliminary allocation of 4 nights, and the team will visit the site in January 2019 to work out any remaining technical details involved with installing this new instrument.

5.6 Instrument Upgrades

5.6.1 Instrument Upgrade Program

Objective: *In order to maintain the competitiveness of Gemini’s current instruments, and to provide more opportunities for community instrument teams and scientists to work with Gemini, we launched an instrument upgrade program in 2015 that solicits proposals from the community. The baseline plan is to have annual calls for proposals with funding alternating between $100,000 USD and $600,000 USD every year.*

2018 Decision Points & Milestones:

- *Begin project(s) from 2017 call*
- *Launch 2018 Call for Proposals*

In 2018, Gemini made progress on existing Instrument Upgrade Program projects:

- The RAMSES (GMOS Filter) Project was selected in 2016 to fund Denise Gonçalves (UFRJ, Brazil) and her team to design and commission new GMOS filters. They will perform a systematic search of symbiotic stars in nearby galaxies, using the new narrow band filters O VI, 6835 Å, FWHM = 50 Å, and O VI continuum, 6780 Å FWHM = 50 Å. We installed the filters in February and completed acceptance tests in March. We expect the final acceptance report from the team by the end of the year, at which point we will make the filters available to users via Fast Turnaround and Director's Discretionary time, then include them in the next standard call thereafter.
- The Gemini Polarization Modulator (GPOL) project was the second selected project in 2016. Jennifer Hoffman from the University of Denver and her team are working to renovate one of the Gemini GPOL units and commission it with NIRI. In May, we shipped the GS GPOL unit to the team and, during the September shutdown, we removed the GN unit to the Hilo base facility (HBF) instrument lab. The team is currently studying the units and will provide a feasibility report and renovation plan. If the upgrade proceeds as planned, GPOL+NIRI commissioning will be possible in 2020A, under the visiting instrument model.
- The GNIRS IFU project was selected in 2017 to add two upgraded Integral Field Units (IFUs) to GNIRS. In 2018, Gemini finalized the contract with University of Durham for this work. The current schedule includes a design review in February 2019, acceptance tests in February 2020 and commissioning and science verification in May 2020. We expect to offer the IFUs to users in 2020B.

Given the ongoing work of the previously selected IUP projects, and the additional complexity arising from now needing to follow the Uniform Guidance for our next call, we did not issue a new Call for Proposals in 2018.

5.6.2 GNIRS Detector Controller

Objective: *Replace the obsolete detector controller for GNIRS. The new controller might also fix the current noise problems, but if not, is a necessary first step for debugging the issue. Once complete, we may decide to replace the similar NIRI controller the same way.*

Deliverables: *The main project deliverable is a fully-integrated new detector controller for GNIRS operations. This project will not be completed in 2018.*

2018 Milestones: *This project is relatively low priority. 2018's goals include assembling a working ARC controller with an Aladdin detector in a lab environment.*

ARC-3 controllers are now running in both Gemini North and Gemini South labs. The GS work focused on developing the needed firmware while the work at GN since then has focused on getting the dewar electronics and cryogenic systems working.

5.7 Altair RTC Upgrades

Objectives: *Improve reliability, maintainability, and capability of ALTAIR with a new real time computer (RTC) by: (1) Ensuring that the baseline functionality and reliability of ALTAIR is maintained for the next 10 years; (2) Providing spares or replacing parts that can become obsolete; and (3) Studying and providing capability improvement as prioritized by science team. We have not yet decided if we will contract this work out or do it in house.*

Deliverables: *The project's primary deliverable is a new RTC that meets the above aims: maintainable baseline functionality and improved options for increased performance.*

2018 Milestones: *Detailed 2018 milestones depend on the 2018 decision point of whether to proceed with this work in-house or with an external contractor.*

- *Initiate project*
- *Determine detailed requirements for RTC, including basic hardware architecture*
- *Start work, either as an in-house effort or by initiating a contract with NRC-H*

This RTC work is now one of the projects encompassed in the new NSF GEMMA award.

5.8 GeMS NGS2

Objective: *Develop and install a new NGS WFS for Canopus. Work is primarily planned to be done via a contract with ANU.*

Deliverables:

- *A camera constructed by ANU which will be installed in Canopus by ANU and Gemini personnel*
- *Complete documentation of the system architecture and typical modes of use*

2018 Milestones:

- *Shipping and Delivery Acceptance*
- *Integration into GeMS*
- *On-sky Testing*
- *High-Level Software changes complete*
- *SV call*
- *External User Documentation complete*
- *Acceptance into Operations*

Pre-ship review is now scheduled for February 2019, with installation scheduled for July 2019 and commissioning later in 2019.

6 Administration & Facilities and Safety

6.1 Administration and Facilities

Administration provides cost-effective administrative support and delivers timely and accurate information to management and governance. The Administration and Facilities Group (AFG) supports in the areas of facilities, infrastructure, fleet, administration, visitor services, and travel services to staff and visitors.

Specific goals for 2018, to be completed by the end of the year.

Budgetary Responsibility
Finish 2018 within [-2%; +3%] of the requested O&M Budget ($28.7M). Continue to promote accountability among the budget account managers.

Gemini is projected to finish the 2018 calendar year with $29.1M of O&M expenses, within the [-2%; +3%] budget spending authority granted by the Board.

Facilities Services
In the continuous effort to provide safe and superior workplaces for Gemini's employees, AFG-N will complete the replacement of seven existing HBF AC systems with eight new high efficiency AC systems.

Projects completed for Gemini North facilities in 2018 include:

- The installation of 8 new air conditioning (A/C) units in the Hilo Base Facility (HBF), this completed the GN Energy Savings Project for HBF.
- The installation of Safety cameras to the exteriors of both HBF and HBF-X buildings to monitor the parking lots, main door entrances and our fleet vehicles. The system provides us the ability to review film within a 30-day period.
- We upgraded our security key scan system which included the replacement of 5 panels and 21 card readers in our two Hilo Base Facilities and at the Summit. We now have on-site control to create our own key scan cards; we have better reporting capabilities and complete control of card access permissions.

Projects completed for Gemini South Facilities in 2018 include:

- The construction of a 344 square foot kitchen breakout room extension on the southwest side of the Gemini Southern Base Facility (SBF). This new area serves multiple purposes such as a dining area for the day and nighttime staff and a coffee lounge area for meetings for all departments.
- The installation of a new A/C chiller for office air conditioning
- New exterior reduced energy lighting for the garden grounds
- The replacement of a critical building UPS unit
- Upgrades made to our internal lodging facilities
- Fabrication and installation of stairs for the elevator service area.
- Creation of an emergency exit from the Gemini southern base lab facility.

- The engineering design project for a new water distribution system on the AURA compound for all the AURA programs and houses.

6.2 Safety

The Safety program ensures a safe and healthy environment for employees and visitors. Gemini's working culture explicitly emphasizes safety of people and equipment. Safety will fully integrate safety into the Observatory operational activities, and will work jointly with partner telescopes on Cerro Pachón and Maunakea to establish shared Safety programs that combine best practices and resources.

Specific goals to complete by the end of 2018 follow.

Staff Safety
Continue providing and assuring a safe and healthy environment for employees and visitors. Provide modern Safety tools and systems and achieve a 90% completion of the mandatory Level A and 80% of the mandatory Level B safety training.

Safety Operations
Consolidate a Safety group at Gemini that delivers Safety services in a way that is coherent with the Safety programs of co-located NSF-funded centers in Chile. Establish synergies and sharing of Safety resources with CFHT and other Maunakea telescopes.

Managers' Safety Responsibilities
Assist Gemini Managers to perform the Managers' Safety tasks required in OSHA's standards and Gemini's Safety program. Suggest actions to eliminate the Safety hazards identified in the regular Safety walkthroughs.

In 2018, Safety worked closely with managers to ensure training compliance rates remain high and incident rates remain low. Gemini Observatory experienced no significant injuries or incidents in 2018. Safety was reorganized in 2018 to report to the Deputy Director to give Safety a higher level of visibility and authority within the Observatory. In 2018, Gemini established a new charter for its Safety Leadership Team to clarify roles and responsibilities throughout the Observatory.

7 Public Information and Outreach

The Gemini Public Information and Outreach (PIO) Office delivers multi-faceted programming which ranges from extensive local outreach programming in our host communities, to a full-service communications office serving all of Gemini's primary audiences. In addition, Gemini PIO oversees all Library services, WWW development and maintenance, facility tours, public and user publications, and graphic services

The PIO staff supported a number of additional initiatives in2018.

Figure 7-1: *Gemini North astronomers Julia Scharwaechter (center) and Kristin Chiboucas (right, back) assist children in making an expanding balloon Universe.*

Highlights include:

- Support of the Science and Evolution of Gemini meeting
- Coordination and logistical support of Korea signing event
- Development of the Broader Impacts program elements for the $26M “GEMMA” NSF award
- Support of NCOA transition communications effort, including leading a Communications Working Group and development of the transition period Strategic Communications Plan
- Assistance in ongoing Maunakea communications and outreach efforts to facilitate future lease negotiations (Maunakea) and new facilities (TMT in Hawai’i and LSST in Chile)

Addressing specific points in the 2018 PODP plans:

New initiatives for Gemini’s Public Information and Outreach in 2018 include:

- *Digital Governance (DG) implementation and Web redesign (including web redesign coordination with AURA) - Full implementation of DG framework (working groups etc.) will be completed by Q2, with Web redesign planning underway and implementation initiated by Q3.*

Digital Governance is now fully implemented at Gemini with regular Core Team and Community of Practice meetings (7 held in 2018). These efforts have resulted in new policies, procedures and standards, as well as identifying and solving many long-standing problems related to maintenance and content updating of webpages. Web redesign work is also well-advanced as described in **Section 4.1**.

- *Eclipse planning for 2019 Chile eclipse, educational programming implementation in coordination with AURA-O (schedule/plan TBD by AURA-O, Gemini staff involvement in plan fully defined by Q4)*

Gemini South PIO staff are working effectively with other AURA-O centers to prepare for the upcoming eclipse which passes over the Gemini, SOAR and the CTIO facilities on July 2nd of 2019. Gemini staff have developed presentations in conjunction with CTIO staff on eclipse eye safety, photography, viewing and the science/history of eclipses. A busy schedule of presentations to students, amateur astronomers, and the local public is already underway and PIO staff presentations are expected to increase in frequency until the eclipse occurs. Gemini South PIO staff plan to offer educational visits to the summit facility for one week prior and post eclipse. The day of the eclipse, staff will assist in logistics for the VIP and media visits at CTIO, no visitors will be allowed at the Cerro Pachón site on the day of the eclipse due to anticipated activities at the neighboring LSST site.

Figure 7-2: A large crowd gathers for an eclipse talk offered by the GS PIO staff at Paihuano in Chile’s Elqui Valley

- *Planning for visual identity redesign (logo). Plan approved/denied by Q2, implementation of plan initiated by Q3 if approved.*

This work did not advanced due to conflicts anticipated with the implementation of NCOA and its branding needs (facilities will be co-branded with NCOA, including visual identities). In addition, we have focused on implementing the recently developed NSF branding standards in 2018.

- *Educational assessment of GN local career awareness programming, surveys developed by Q2, executed in Q3, results delivered in Q4 with recommendations for programmatic modifications based on results.*

An overview of Gemini's Career Education Program Evaluation was received in April 2018 from SMS Research in Honolulu. The report was thorough and comprehensive in addressing feedback from both pre- and post-surveys for teachers, students and educators and how to move forward in future years based on data from this work.

Based on the results of the pilot project the Journey Through the Universe (Journey) program initiatives (career panels and class presentations) contributed significantly to increasing all three goals of the Career Education Program. Students across all grade levels increased their awareness of observatories and the types of work conducted there. In addition, their level of interest in astronomy-related activities increased significantly. Awareness of and interest in Observatory jobs was most relevant and appealing to high school students.

The recommendations from the evaluations are being introduced in our fifteenth year of Journey Through the Universe in 2019 and will continue to benefit the program for years to come.

- *Support of NCOA communications strategy, development and implementation, schedule/plan TBD*

As Chair of the Communications Working Group since Q3, Gemini PIO manager, Peter Michaud, provided extensive support of the NCOA communications efforts and leadership of the development of a comprehensive Strategic Communications Plan in Q4.

- *2018 GSM support (Science and Evolution of Gemini) in San Francisco, completed by Q3*

Supported the Science and Evolution of the Gemini Observatory meeting with logistical and communications efforts, including web, social media and documentation. This work also included extensive assistance in planning, implementation, documentation, and communications for the Korea signing ceremony (held at the meeting) which resulted in a cover story in the July issue of *Gemini*Focus. This publication was later printed and used by the new Korea Gemini Office for promotion to Korean stakeholders.

Figure 7-3: Participants at the 2018 Science and Evolution of Gemini Observatory meeting in San Francisco. Image was part of multiple social media posts during the meeting as well as in publications like GeminiFocus and the monthly e-newscast.

- *Expanded coordination with AURA communications efforts as well as other AURA centers, ongoing throughout 2018 completed in Q4*

Much of this cross-AURA communications effort was realized by the support of NCOA communications described above. In addition, collaboration with the AURA Corporate Office's recently hired Communications Coordinator has been extensive in the development of social media content and coordination, press releases and other communication initiatives.

- *Documentation of Blanco (July) and SOAR (October) mirror coatings at GS completed by Q4*

Consultation on the documentation of the mirror coating of the Blanco Telescope was provided by Gemini South staff. The SOAR primary mirror coating was postponed due technical reasons so documentation was not necessary.

In addition, Gemini South staff completed successful photographic documentation of the arrival of the LSST Coating Chamber to Cerro Pachón resulting in an archive of images for future reference.

- *Development of formal policy and new procedures for tours at both GN and GS completed by Q2, full implementation by Q3*

While this work has proven to be more involved than initially thought, a policy statement and procedures for each site (North and South) are now complete and the policy will be submitted for review by the end of 2018. The slight delays (one Quarter) are attributed to the unexpected magnitude of eclipse planning in Chile and the impact of management effort due to workload related to the GEMMA proposal submission and implementation.

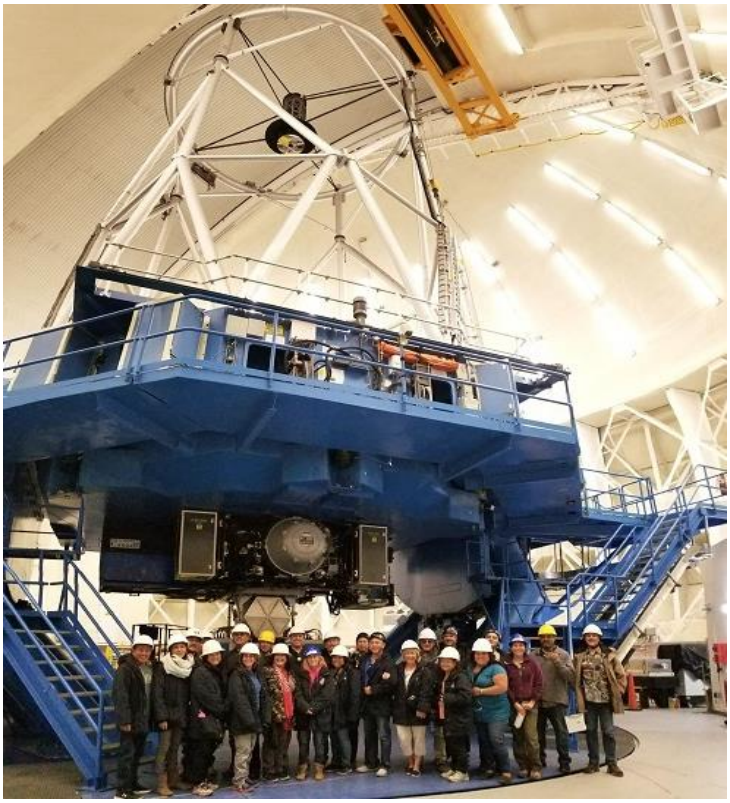

Figure 7-4: Hawai'i Department of Education Leadership Team pose for image inside of Gemini North facility as part of a partnership with Hawaii educators.

- *Establishing expanded partnerships with 5 local (Chile) student/school astronomy clubs with a minimum of 2 new programs/events completed by Q4*

Gemini South staff completed this work and trained teachers in charge of astronomy clubs from several cities of the Coquimbo Region in basic astronomy and astronomy imaging using Salsa-J software.

- *Pilot project to form female student (~10 year-olds) astronomy club in La Serena based at Gemini/AURA plan completed by Q2, pilot implementation by Q4*

Gemini South staff were unable to complete this initiative due to a lack of female students enrolling in the pilot project (2 girls + 5 boys). For this reason, we open the call to male and female students and modified it as a robotics club (with the purpose of promoting Gemini's remote operations). During 2018, Gemini implemented several workshops (twice a month), and currently we are preparing their first presentation during the scheduled 2019 AstroDay Chile event.

Continuation of existing Gemini PIO programming (all completed by Q4), including:

- *Ongoing local outreach programming (Journey, Viaje, AstroDay(s), StarLab) will continue as in prior years and continue to focus on observatory careers and other opportunities provided by Gemini to our local host communities.*

Gemini celebrated the fourteenth consecutive year of the flagship Journey through the Universe program in 2018 with this year's program featuring career panels, StarLab planetarium programming, and K-12 classroom presentations. In Chile, Gemini hosted the annual AstroDay Chile program and Viaje al Universo. In addition, the StarLab portable planetarium loan program continued at both sites as well as numerous local community outreach programs that included: AstroDay Hawaii, Onizuka Day, GEMS, and Family Astro events.

Figure 7-5*: Gemini scientist Rodrigo Carrasco gets animated as he explains distances in the Universe during the 2018 AstroDay Chile program.*

- *Facility tour coordination and delivery will continue as in previous years (note item above on the development of new formal policies for summit facility tours).*

Tours, which met our criteria, were provided upon request throughout the year at both sites. In addition, Gemini North staff provided quarterly tours for the Kamaaina Observatory Experience for local Hawai'i residents (48 pax per quarter). See item above on development of summit tour policy.

- *General communications (publications, press releases, social media) will continue as in prior years with a goal of a minimum of 8 press releases during the course of the year, and quarterly publication of GeminiFocus; monthly production and distribution of e- newscast; and regular social media content as appropriate.*

Ongoing communications efforts continued on pace with a total of 8 press releases, on-schedule publication of the quarterly GeminiFocus newsletter, monthly e-newscasts, and regular social media posts.

Figure 7-1: Image of 2018 Year in Review issue of GeminiFocus showing the covers of all quarterly issues published during the year.

- *Annual Communications/Outreach internship will continue at Gemini North, with consideration of additional opportunities for students as appropriate.*

This internship was executed during quarters 1&2 and resulted in a successful experience for Hannah Blomgren from Salt Lake City. While she did many projects, most significant was a video program on Gemini science and PI.

- *WWW content development will continue as appropriate and support of website redesign as noted above.*

Web content continued as required with an average of 1.5 webfeature and/or press release stories per month. An archive of these stories can be found at http://www.gemini.edu/sciops/releases.

- *Library functions will continue with emphasis on journal subscriptions, science paper tracking and securing publications for staff as requested.*

Library functions were executed in a timely fashion and provided staff with necessary publications and tracking of scientific publications was accurate and complete. The library staff (0.5 FTE) also assisted in setting up press release webpages, monthly e-Newscasts, as well as disseminating GeminiFocus (digital and print). Another key milestone was the implementation and move into newly renovated (and improved) library space which was needed due to insect infestation and outdated storage facilities.

- *Professional conference participation and support (CAP, AAS, staff training experiences)*

Highlights for PIO staff participation in professional conferences during 2018 include:

- The Communicating Astronomy with the Public in Japan
- January 2018 meeting of the American Astronomical Society in Washington D.C.
- International Astronomical Union in Vienna, Austria

- Astronomical Society of the Pacific annual education meeting
- Project Astro Site Leaders Meeting/Workshop
- Global Hands on Universe and Galileo Teacher Training workshop, Vienna, Austria
- Chile Outreach/Education conference
- SOCHIAS

Additional staff training included:

- *Coordination with Science User Support Group communications efforts and implementation of strategic communications plan developed in 2017*

Communications with our key strategic audiences continues to advance as illustrated by the development and growth of the partnership between the PIO communications team and Gemini's Science User Support Department (SUSD). In 2018, the PIO and SUSD joint efforts included coordination at the 2018 winter AAS meeting, the SOCHIAS meeting in Chile and the Science and Evolution of Gemini user meeting. In addition, coordination in the development of user content for the GeminiFocus newsletter and monthly e-newscasts has strengthened due to weekly meetings between the two departments to coordinate messaging and strategy.

- *Career resources program integration into local outreach programming and development of additional expanded career sheets (8.5x11") on a minimum of four staff (two from each site)*

Career awareness continues to be a primary focus for local outreach programming in our host communities in Hawai'i and Chile. Our career brochures and inserts continue to be popular among students, parents, and teachers and the in-depth profile sheets have been expanded to include more diversity in both careers, gender and ethnicity. Currently we are in need of printing more brochures and will do that in 2019 when budget resources will allow us to update content and re-print for continued distribution.

8 External Relations

In 2018, Gemini's goal is to maintain and grow a strong international partnership amongst the Full Participants in the International Agreement and Gemini's Limited-Term Collaborators.

Toward this goal:

- *Members of the Gemini Directorate and Staff will attend each of the Participant's major national astronomy meetings.*
- *The Gemini Directorate will lead the development of memoranda of understanding with any new limited-term collaborators.*
- *The Gemini Directorate will work with the Gemini Board to engage potential new full participants to the Gemini International Agreement.*
- *The Gemini Directorate will work closely with the Gemini Board leading to the International Agreement Assessment Point in late 2018.*
- *Gemini will host the triennial Gemini Science & Users Meeting. (See* ***Section*** **4.3**.*)*
- *Gemini will finalize its Strategic Plan for Beyond 2021. (See below.)*

In 2018, Gemini Directorate and staff attended every major national astronomy meeting of the Participant's. Notably several Directorate members and staff attended the Korean KASI K-GMT Users Meeting. Directorate and staff also attended the annual CASCA and combined SOCHIAS/AAA meeting. At the Science and Evolution of Gemini Observatory user meeting in San Francisco in July, Korea was formally welcomed into the International Agreement as a full Participant starting in 2019. More information on this triennial science & users meeting is in **Section 4.3**. Gemini worked closely with the Gemini Board in 2018 leading up to the International Agreement Assessment Point at the November 2018 Board meeting. Following that meeting, the Gemini Board published the following resolution announcing the intention of all current participants to remain in the next International Agreement:

> **2018.B.3.** The Board has executed an Assessment Point in accordance with Article 4 of the International Gemini Agreement. At this Assessment Point, all the Participants have stated their intentions to remain in the partnership post-2021. The Board is pleased to note the strong interest in Gemini from the Participants and their user communities.

At the November 2018 Gemini Board meeting, Gemini presented a complete draft of its "Strategic Scientific Plan for Gemini Observatory".

8.1 Strategic Plan for Beyond 2021

The Gemini Board of Directors has approved a Strategic Vision for Gemini Observatory for the decade 2021-2030. The Board instructed the Observatory to develop a Strategic Plan, which is a detailed roadmap for reaching the goals outlined in the Strategic Vision. The Plan must also include and encourage a capacity for responding to new opportunities, changes in budget, and a changing landscape of astronomical facilities. An initial outline has been developed for the Strategic Plan, and this outline was approved at the November 2017 Board meeting.

In 2018, the Observatory will focus on turning the current outline into a detailed plan, which will include the following key elements:

- *Preserving and enhancing PI-driven science at Gemini;*
- *Making Gemini South the premier facility for LSST follow-up in the coming decade; and*
- *Developing further the adaptive optics capabilities at Gemini North.*

The key requirements and milestones will be specified in each of these three areas, under various funding scenarios. A draft of the Strategic Plan will be available by late February, and an update will be presented at the May 2018 Governance meetings. A presentation of an advanced draft of the Strategic Plan will be given to the Gemini community at the July 2018 Science and Users Meeting. The final version will be presented to the Gemini Board at its November 2018 meeting.

At the November 2018 Gemini Board meeting, Gemini presented a complete draft of its "Strategic Scientific Plan for Gemini Observatory". Following that meeting, the Observatory will work with a sub-committee of the Board to finalize the draft. This plan is a living document and will continue to be revised in the future.

9 Transition to NCOA

In late 2016, the NSF requested AURA to begin planning a reorganization of NSF-funded ground- based OIR assets, which include NOAO, Gemini, and the future operations of LSST, into a single reorganized executive organization, provisionally named the National Center for Optical- Infrared Astronomy (NCOA). The Organization, Management, and Operation (OMO) Plan produced by AURA in response to the NSF request is currently under review at the NSF, with a decision expected in early 2018. At its November 2017 meeting, the Gemini Board issued the resolution:

> *2017.B.9. The Board endorses the concept, as outlined in the "NCOA Organization, Management, and Operation Plan" document, for restructuring optical-infrared assets that include NOAO programs and operations, Gemini Observatory, and LSST operations under a single administrative and managerial framework. The Board is reassured that in this concept Gemini retains financial independence and that strategic vision and scientific directions remain with the International Participants. The Board looks forward to being engaged throughout the implementation process.*

As of late 2017, three AURA NCOA Working Groups, each of which includes Gemini representation, are developing various aspects of the NCOA implementation. However, many details of how Gemini will manage its transition to NCOA can only be defined once the NSF gives formal approval to proceed to implementation and provides directives to AURA regarding the implementation details and timeline.

Once formal approval is obtained (expected in early 2018), Gemini will present to NSF its plans for the transition to NCOA. At the start of 2018, the Director and Deputy Director are spending up to 50% of their effort on NCOA planning and preparation. Additionally, several Department Heads, particularly in ITS and Software, are spending up to 20% of their time on NCOA preparation and planning.

Planning for NCOA continued in 2018. Formal NSF approval for NCOA is now expected in early 2019.

10 Human Resources

Human Resources (HR) plays a key role in supporting Gemini Observatory in recruitment, hiring, and retention of employees. Gemini is committed to cultivating a diverse and inclusive workplace. We focus on increasing staff satisfaction and engagement, as measured by achieving a staff voluntary turnover rate below 6%.

Initiatives in HR in 2018 include:

- *Upgrade Ulti-Pro Recruitment Module*
- *Introduce an On-Boarding Program within Ulti-Pro toward streamlining the on-boarding process for both the new hire and HR*
- *Implement an Ombudsperson Program*
- *Implement a Mentorship Program*
- *Provide American Management Association (AMA) training courses to managers in both Hilo and La Serena*
- *Support staff and management in the transition to NCOA, including the unification of policies amongst the AURA Centers that will form NCOA and changes in reporting lines*

The Ulti-Pro upgrades were implemented. Regarding the Ombudsperson Program, HR and the Directorate determined that this need was best met through a third party vendor who staff can contact confidentially and anonymously, if they so desire, with any questions or concerns regarding ethical or misconduct incidents, as well as other issues. This information was transmitted to staff and added to the information given to new hires. A mentorship program was established and initial pairings of mentor/mentee made. In 2018, Gemini did not run on-site American Management Association (AMA) training courses, though we intend to again in the future. In 2018, Gemini worked closely with other branches of AURA to begin unification of policies ahead of the transition to NCOA.

Appendix A. Acronyms and Abbreviations

AC	Air Conditioning
A&G	Acquisition and Guiding units
AAA	Argentine Association of Astronomy
AAO	Australian Astronomical Observatory
AAS	American Astronomical Society
AFG	Administration and Facilities Group
`Alopeke	Upgraded version of DSSI installed on Gemini North
ALTAIR	ALTtitude conjugate Adaptive optics for the InfraRed
AMA	American Management Association
ANU	Australian National University
AO	Adaptive Optics
API	Application Programming Interface
AURA	Association of Universities for Research in Astronomy, Inc.
Canopus	Adaptive Optics optical bench for GeMS MCAO
CASCA	Canadian Astronomical Society/ Société Canadienne d'Astronomie
CCSN	Core Collapse Supernova
CFHT	Canada-France-Hawaii Telescope
CONICYT	Comisión Nacional de Investigación Científica y Tecnológica
CSA	Cooperative Support Agreement
CTIO	Cerro Tololo Inter-American Observatory
CY	Calendar Year
DG	Digital Governance
DRAGONS	Data Reduction for Astronomy from Gemini Observatory North and South
DSSI	Differential Speckle Survey Instrument
EPO	Education & Public Outreach
ESPaDOnS	Echelle Spectro-Polarimetric Device for the Observation of Stars
FLAMINGOS-2	FLoridA Multi-Aperture Imaging Near-Infrared Grism Observation Spectrometer-2
FT	Fast Turnaround
FTE	Full-Time Equivalent
FY	Fiscal Year
JHU	Johns Hopkins University
gacq	Gemini Acquisition tool
GASP	Galway Astronomical Stokes Polarimeter
GBOD	Gemini Board of Directors
GEMMA	Gemini in the Era of Multi-Messenger Astronomy
GeMS	Gemini Multi-conjugate Adaptive Optics System
GeMS-DM0	Deformable mirror conjugated to 0km altitude in GeMS

GHOST	Gemini High-resolution Optical SpecTrograph
GIRMOS	Gemini Infrared Multi-Object Spectrograph
GMOS	Gemini Multi-Object Spectrograph
GN	Gemini North
GNAO	Gemini North Adaptive Optics
GNAOI	GNAO Imager
GNIRS	Gemini Near-Infrared Spectrograph
GOA	Gemini Observatory Archive
GPI	Gemini Planet Imager
GPIES	Gemini Planet Imager Exoplanet Survey
GPOL	Gemini Polarization Modulator
GRACES	Gemini Remote Access to Canada-France-Hawaii ESPaDOnS Spectrograph
GS	Gemini South
GSAOI	Gemini South Adaptive Optics Imager
HBF	Hilo Base Facility
IDF	Instrument Development Fund
IFU	Integral Field Unit
IGRINS	Immersion Grating INfrared Spectrometer
IRAF	Image Reduction and Analysis Facility
IT	Information Technology
ITAC	International Time Allocation Committee
ITS	Information Technology Services
IUP	Instrument Upgrade Program
JWST	James Webb Space Telescope
KASI	Korea Astronomy and Space Science Institute
LIGO	Laser Interferometer Gravitational-Wave Observatory
LIRG	Luminous Infrared Galaxy
LLP	Large and Long Program
LSST	Large Synoptic Survey Telescope
M2 CEM	Secondary Mirror Central Electronics Module
MAROON-X	A 500 – 900 nm, high-precision radial velocity (0.5 m/s) spectrograph
MCAO	Multi-Conjugate Adaptive Optics
MMA	Multi-Messenger Astronomy
NCOA	National Center for Optical-Infrared Astronomy
NGO	National Gemini Office
NGS2	new Natural Guide Star WFS for GeMS MCAO
NIFS	Near-Infrared Integral Field Spectrometer
NIRI	Near Infrared Imager and Spectrometer
NOAO	National Optical Astronomy Observatories
NRC	National Research Council of Canada
NSF	National Science Foundation

O&M	Operations & Maintenance (budget fund)
OCS	Observatory Control Systems
OCTOCAM	former name for the instrument SCORPIO
OT	Observing Tool
PIO	Public Information & Outreach
PI	Principal Investigator
PV	Priority Visitor (observing mode)
PIT	Phase I Tool
POLISH2	A high sensitivity, optical polarimeter
POP	Program Operations Plan
RTC	Real-Time Computer platform for Gemini AO systems
RTEMS	Real-Time Executive for Multiprocessor Systems
SBF	Southern Base Facility
SCORPIO	Spectrograph and Camera for Observations of Rapid Phenomena in the Infrared and Optical
seqexec	Sequence Executor
SLT	Safety Leadership Team
SOAR	Southern Astrophysical Research (Telescope)
SOCHIAS	La Sociedad Chilena de Astronomía (Chilean Astronomical Society)
STAC	Science and Technology Advisory Committee
STScI	Space Telescope Science Institute
SUSD	Science User Support Department
SwRI	Southwest Research Institute
TBD	To Be Determined
TCC	Telescope Control Console
TDA	Time Domain Astronomy
TEXES	Texas Echelon X[C]ross Echelle Spectrograph
TMT	Thirty Meter Telescope
UV	Ultraviolet
VIP	Visitor Instrument Program
WFS	WaveFront Sensor

Appendix B. Publications by Staff

Publications in this appendix list only authors on staff at Gemini Observatory. Author order is indicated in brackets, e.g. "Smith[1]" indicates Smith is the first author.

B.1 Staff Refereed Publications

Chené, A.-N.[11]. New Galactic star clusters discovered in the disc area of the VVVX survey. *Monthly Notices of the Royal Astronomical Society*, 481:3902-3920. December, 2018.

Xu, S.[13]. Dust production and depletion in evolved planetary systems. *Monthly Notices of the Royal Astronomical Society*, 481:2601-2611. December, 2018.

Taylor, M. A.[22]. The Fornax Cluster VLT Spectroscopic Survey - I. VIMOS spectroscopy of compact stellar systems in the Fornax core region. *Monthly Notices of the Royal Astronomical Society*, 481:1744-1756. December, 2018.

Kim, Hwihyun [6]. High-resolution infrared spectroscopy of field Red Horizontal Branch stars. *Journal of Molecular Structure*, 1174:3-5. December, 2018.

Leggett, S. K.[1]; Xu, Siyi [20]. Distant White Dwarfs in the US Naval Observatory Flagstaff Station Parallax Sample. *The Astrophysical Journal Supplement Series*, 239:26. December, 2018.

Peck, Alison [11]. ALMA Polarimetry of Sgr A*: Probing the Accretion Flow from the Event Horizon to the Bondi Radius. *The Astrophysical Journal*, 868:101. December, 2018.

Chu, J.[6]. C-GOALS. II. Chandra observations of the lower luminosity sample of nearby luminous infrared galaxies in GOALS. *Astronomy & Astrophysics*, 620:A140. December, 2018.

Salinas, R.[5]. The curious case of the companion: evidence for cold accretion onto a dwarf satellite near the isolated elliptical NGC 7796. *Astronomy & Astrophysics*, 620:A133. December, 2018.

Andersen, M.[6]. Substellar and low-mass dwarf identification with near-infrared imaging space observatories. *Astronomy & Astrophysics*, 620:A132. December, 2018.

Geballe, T. R.[8]. Early formation of carbon monoxide in the Centaurus A supernova SN 2016adj. *Monthly Notices of the Royal Astronomical Society*, 481:806-818. November, 2018.

Urrutia-Viscarra, F.[5]. Kinematics and physical properties of the nearby galaxy NGC 4656 and its TDG candidate. *Monthly Notices of the Royal Astronomical Society*, 480:3257-3278. November, 2018.

Schwamb, M. E.[5]. K2 precision lightcurve: Twelve days in the Pluto-Charon system. *Icarus*, 314:265-273. November, 2018.

Taylor, Matthew A.[1]. A Collection of New Dwarf Galaxies in NGC 5128's Western Halo. *The Astrophysical Journal Letters*, 867:L15. November, 2018.

Januszewski, H. C.[6]. Resolved Kinematics of Runaway and Field OB Stars in the Small Magellanic Cloud. *The Astrophysical Journal Letters*, 867:L8. November, 2018.

Madrid, Juan P.[1]; O'Neill, Conor R.[2]. A Wide-field Map of Intracluster Globular Clusters in Coma. *The Astrophysical Journal*, 867:144. November, 2018.

Jørgensen, Inger [1]; Chiboucas, Kristin [2]. The Gemini/Hubble Space Telescope Galaxy Cluster Project: Stellar Populations in the Low-redshift Reference Cluster Galaxies. *The Astronomical Journal*, 156:224. November, 2018.

Goodsell, Stephen J.[24]; Rantakyrö, Fredrik T.[44]. Dynamical Constraints on the HR 8799 Planets with GPI. *The Astronomical Journal*, 156:192. November, 2018.

Simpson, Chris [6]. The structure of post-starburst galaxies at 0.5 < z < 2: evidence for two distinct quenching routes at different epochs. *Monthly Notices of the Royal Astronomical Society*, 480:381-401. October, 2018.

Labrie, K.[8]. HST imaging of four gravitationally lensed quasars. *Monthly Notices of the Royal Astronomical Society*, 479:4796-4814. October, 2018.

Simpson, C.[18]. A direct calibration of the IRX-β relation in Lyman-break Galaxies at z = 3-5. *Monthly Notices of the Royal Astronomical Society*, 479:4355-4366. October, 2018.

Schirmer, Mischa [6]. 3C 17: The BCG of a Galaxy Cluster at z = 0.22. *The Astrophysical Journal Supplement Series*, 238:31. October, 2018.

Kim, Hwihyun [10]. IGRINS Spectral Library. *The Astrophysical Journal Supplement Series*, 238:29. October, 2018.

Scharwächter, J.[19]. The Close AGN Reference Survey (CARS): SOFIA Detects Spatially Resolved [C II] Emission in the Luminous AGN HE 0433-1028. *The Astrophysical Journal Letters*, 866:L9. October, 2018.

Xu, Siyi [1]. Infrared Variability of Two Dusty White Dwarfs. *The Astrophysical Journal*, 866:108. October, 2018.

Conn, Blair C.[18]. SMASHing the LMC: A Tidally Induced Warp in the Outer LMC and a Large-scale Reddening Map. *The Astrophysical Journal*, 866:90-. October, 2018.

Miller, Bryan W.[3]; Carrasco, Eleazar R.[4]; Simunovic, Mirko [5]; Schirmer, Mischa [6]; Taylor, Matthew A.[15]. The GeMS/GSAOI Galactic Globular Cluster Survey (G4CS). I. A Pilot Study of the Stellar Populations in NGC 2298 and NGC 3201. *The Astrophysical Journal*, 865:160. October, 2018.

Scharwächter, J.[14]. The Close AGN Reference Survey (CARS). No evidence of galaxy-scale hot outflows in two nearby AGN. *Astronomy & Astrophysics*, 618:A27. October, 2018.

Scharwächter, J.[8]. Spatially resolved electron density in the narrow line region of z < 0.02 radio AGNs. *Astronomy & Astrophysics*, 618:A6. October, 2018.

Labrie, Kathleen [6]. Using the Properties of Broad Absorption Line Quasars to Illuminate Quasar Structure. *Monthly Notices of the Royal Astronomical Society*, 479:4153-4171. September, 2018.

Kim, Hwihyun [8]. Chemical Compositions of Evolved Stars from Near-infrared IGRINS High-resolution Spectra. I. Abundances in Three Red Horizontal Branch Stars. *The Astrophysical Journal*, 865:44. September, 2018.

Geballe, T. R.[2]. Near-infrared Spectroscopy of Supernova 2017eaw in 2017: Carbon Monoxide and Dust Formation in a Type II-P Supernova. *The Astrophysical Journal Letters*, 864:L20. September, 2018.

Blakeslee, John P.[10]. The Next Generation Virgo Cluster Survey (NGVS). XXXI. The Kinematics of Intracluster Globular Clusters in the Core of the Virgo Cluster. *The Astrophysical Journal*, 864:36. September, 2018.

Hirst, P.[68]; Turner, J.[131]. The Astropy Project: Building an Open-science Project and Status of the v2.0 Core Package. *The Astronomical Journal*, 156:123. September, 2018.

Kim, H.[22]. Search for star cluster age gradients across spiral arms of three LEGUS disc galaxies. *Monthly Notices of the Royal Astronomical Society*, 478:3590-3604. August, 2018.

Simpson, C.[6]. A Machine-learning Method for Identifying Multiwavelength Counterparts of Submillimeter Galaxies: Training and Testing Using AS2UDS and ALESS. *The Astrophysical Journal*, 862:101. August, 2018.

Dupuy, Trent J.[1]. The Hawaii Infrared Parallax Program. III. 2MASS J0249-0557 c: A Wide Planetary-mass Companion to a Low-mass Binary in the β Pic Moving Group. *The Astronomical Journal*, 156:57. August, 2018.

Goodsell, Stephen J.[26]; Hibon, Pascale [28]; Rantakyrö, Fredrik T.[47]. Direct Imaging of the HD 35841 Debris Disk: A Polarized Dust Ring from Gemini Planet Imager and an Outer Halo from HST/STIS. *The Astronomical Journal*, 156:47. August, 2018.

Schwamb, Megan E.[1]. Planet Four: Terrains - Discovery of araneiforms outside of the South Polar layered deposits. *Icarus*, 308:148-187. July, 2018.

Blakeslee, John P.[6]. The Globular Cluster Systems of Ultra-diffuse Galaxies in the Coma Cluster. *The Astrophysical Journal*, 862:82. July, 2018.

Simpson, C. J.[8]. An ALMA Survey of the SCUBA-2 Cosmology Legacy Survey UKIDSS/UDS Field: Identifying Candidate z ˜ 4.5 [C II] Emitters. *The Astrophysical Journal*, 861:100. July, 2018.

Geballe, T. R.[4]. The Multiple Pre-main-sequence System PR Ori and the Associated HH 305 Flow. *The Astronomical Journal*, 156:25. July, 2018.

Kim, Hwihyun [9]. A Comparison of Young Star Properties with Local Galactic Environment for LEGUS/LITTLE THINGS Dwarf Irregular Galaxies. *The Astronomical Journal*, 156:21. July, 2018.

Gimeno, G.[5]. Towards an improvement in the spectral description of central stars of planetary nebulae. *Astronomy & Astrophysics*, 614:A135. July, 2018.

Carrasco, Eleazar R.[3]. A luminous X-ray outburst from an intermediate-mass black hole in an off-centre star cluster. *Nature Astronomy*, 2:656-661. June, 2018.

Simpson, Chris [23]. An ALMA Survey of the SCUBA-2 Cosmology Legacy Survey UKIDSS/UDS Field: Number Counts of Submillimeter Galaxies. *The Astrophysical Journal*, 860:161. June, 2018.

Taylor, Matthew A.[4]; Miller, Bryan W.[16]. The Next Generation Fornax Survey (NGFS). IV. Mass and Age Bimodality of Nuclear Clusters in the Fornax Core Region. *The Astrophysical Journal*, 860:4. June, 2018.

Lundquist, M.[5]; Chené, A.-N.[7]. Metallicity Variations in the Type II Globular Cluster NGC 6934. *The Astrophysical Journal*, 859:81. June, 2018.

Goodsell, Stephen J.[26]; Hibon, Pascale [28]; Rantakyrö, Fredrik T.[44]. GPI Spectra of HR 8799 c, d, and e from 1.5 to 2.4 µm with KLIP Forward Modeling. *The Astronomical Journal*, 155:226. June, 2018.

Firpo, Verónica [4]. An outflow in the Seyfert ESO 362-G18 revealed by Gemini-GMOS/IFU observations. *Astronomy & Astrophysics*, 614:A94. June, 2018.

Xu, Siyi [6]. Tumbling motion of 1I/`Oumuamua and its implications for the body's distant past. *Nature Astronomy*, 2:407-412. May, 2018.

Peck, A. B.[24]. LeMMINGs - I. The eMERLIN legacy survey of nearby galaxies. 1.5-GHz parsec-scale radio structures and cores. *Monthly Notices of the Royal Astronomical Society*, 476:3478-3522. May, 2018.

Simpson, Chris [7]. The enhancement of rapidly quenched galaxies in distant clusters at $0.5 < z < 1.0$. *Monthly Notices of the Royal Astronomical Society*, 476:1242-1257. May, 2018.

Sivo, G.[1]. Towards an automatic wind speed and direction profiler for Wide Field adaptive optics systems. *Monthly Notices of the Royal Astronomical Society*, 476:999-1009. May, 2018.

Geballe, T. R. [6]. Retrieval of haze properties and HCN concentrations from the three-micron spectrum of Titan. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 210:197-203. May, 2018.

Schwamb, Megan E.[9]. OSSOS. VII. 800+ Trans-Neptunian Objects—The Complete Data Release. *The Astrophysical Journal Supplement Series*, 236:18. May, 2018.

Taylor, Matthew A.[3]; Miller, Bryan W.[16]. The Next Generation Fornax Survey (NGFS). III. Revealing the Spatial Substructure of the Dwarf Galaxy Population Inside Half of Fornax's Virial Radius. *The Astrophysical Journal*, 859:52. May, 2018.

Geballe, Thomas R.[12]. An L Band Spectrum of the Coldest Brown Dwarf. *The Astrophysical Journal*, 858:97. May, 2018.

Taylor, Matthew A.[14]. Stellar Population Properties of Ultracompact Dwarfs in M87: A Mass-Metallicity Correlation Connecting Low-metallicity Globular Clusters and Compact Ellipticals. *The Astrophysical Journal*, 858:37. May, 2018.

Kim, Hwihyun [13]. High-resolution Near-IR Spectral Mapping with H2 and [Fe II] Lines of Multiple Outflows around LkHα 234. *The Astrophysical Journal*, 858:23. May, 2018.

Margheim, S.[10]. A fast-evolving luminous transient discovered by K2/Kepler. *Nature Astronomy*, 2:307-311. April, 2018.

Jørgensen, Inger [1]; Chiboucas, Kristin[2]. The Gemini/HST Galaxy Cluster Project: Redshift 0.2-1.0 Cluster Sample, X-Ray Data, and Optical Photometry Catalog. *The Astrophysical Journal Supplement Series*, 235:29. April, 2018.

Schirmer, Mischa [4]. On the Nature of Ultra-faint Dwarf Galaxy Candidates. II. The Case of Cetus II. *The Astrophysical Journal*, 857:70. April, 2018.

Xu, Siyi [14]. The Excited Spin State of 1I/2017 U1 'Oumuamua. *The Astrophysical Journal Letters*, 856:L21. April, 2018.

Smith, A. B.[24]. Toward Understanding the B[e] Phenomenon. VII. AS 386, a Single-lined Binary with a Candidate Black Hole Component. *The Astrophysical Journal*, 856:158. April, 2018.

Carrasco, Eleazar R.[8]. Using Strong Gravitational Lensing to Identify Fossil Group Progenitors. *The Astrophysical Journal*, 856:131. April, 2018.

Ferrarese, Laura [3]. The Next Generation Virgo Cluster Survey (NGVS). XVIII. Measurement and Calibration of Surface Brightness Fluctuation Distances for Bright Galaxies in Virgo (and Beyond). *The Astrophysical Journal*, 856:126. April, 2018.

Salinas, R.[1]. Stellar Variability at the Main-sequence Turnoff of the Intermediate-age LMC Cluster NGC 1846. *The Astronomical Journal*, 155:183-. April, 2018.

Dupuy, Trent J.[2]. Orbit and Dynamical Mass of the Late-T Dwarf GL 758 B. *The Astronomical Journal*, 155:159-. April, 2018.

Carrasco, Eleazar R.[3]. Multiwavelength follow-up observations of the tidal disruption event candidate 2XMMi J184725.1-631724. *Monthly Notices of the Royal Astronomical Society*, 474:3000-3008. March, 2018.

Kim, H.[36]. The Resolved Stellar Populations in the LEGUS Galaxies1. *The Astrophysical Journal Supplement Series*, 235:23. March, 2018.

Salinas, R.[8]. A High-precision Trigonometric Parallax to an Ancient Metal-poor Globular Cluster. *The Astrophysical Journal Letters*, 856:L6. March, 2018.

Taylor, Matthew A.[3]; Miller, Bryan[19]. The Next Generation Fornax Survey (NGFS). II. The Central Dwarf Galaxy Population. *The Astrophysical Journal*, 855:142. March, 2018.

Kim, H.[3]. Extinction Maps and Dust-to-gas Ratios in Nearby Galaxies with LEGUS. *The Astrophysical Journal*, 855:133. March, 2018.

Salinas, Ricardo [7]. The MAVERIC Survey: A Red Straggler Binary with an Invisible Companion in the Galactic Globular Cluster M10. *The Astrophysical Journal*, 855:55. March, 2018.

Kim, Hwihyun [8]. A Study of Two Dwarf Irregular Galaxies with Asymmetrical Star Formation Distributions. *The Astrophysical Journal*, 855:7. March, 2018.

Stephens, A. W.[4]. The Globular Cluster NGC 6402 (M14). II. Variable Stars. *The Astronomical Journal*, 155:116. March, 2018.

Schirmer, Mischa [2]. Precise weak lensing constraints from deep high-resolution Ks images: VLT/HAWK-I analysis of the super-massive galaxy cluster RCS2 J 232727.7-020437 at z = 0.70. *Astronomy & Astrophysics*, 610:A85. March, 2018.

Dupuy, Trent J.[5]. Variability of the lowest mass objects in the AB Doradus moving group. *Monthly Notices of the Royal Astronomical Society*, 474:1041-1053. February, 2018.

Sanmartim, D.[7]. Optical polarimetric and near-infrared photometric study of the RCW95 Galactic H II region. *Monthly Notices of the Royal Astronomical Society*, 474:55-68. February, 2018.

Schirmer, M.[9]. First results from GeMS/GSAOI for project SUNBIRD: Supernovae UNmasked By Infra-Red Detection. *Monthly Notices of the Royal Astronomical Society*, 473:5641-5657. February, 2018.

Chené, André-Nicolas [31]. BRITE-Constellation high-precision time-dependent photometry of the early O-type supergiant ζ Puppis unveils the photospheric drivers of its small- and large-scale wind structures. *Monthly Notices of the Royal Astronomical Society*, 473:5532-5569. February, 2018.

Labrie, K.[4]. The intrinsic far-UV spectrum of the high-redshift quasar B1422+231. *Monthly Notices of the Royal Astronomical Society*, 473:4722-4730. February, 2018.

Blakeslee, J. P.[3]. A Precise Distance to the Host Galaxy of the Binary Neutron Star Merger GW170817 Using Surface Brightness Fluctuations. *The Astrophysical Journal Letters*, 854:L31-. February, 2018.

Schirmer, Mischa [5]. Gemini Follow-up of Two Massive H I Clouds Discovered with the Australian Square Kilometer Array Pathfinder. *The Astrophysical Journal Letters*, 854:L6. February, 2018.

Kim, Hwihyun [9]. Wolf 1130: A Nearby Triple System Containing a Cool, Ultramassive White Dwarf. *The Astrophysical Journal*, 854:145. February, 2018.

Schirmer, M.[9]. Studying the Ultraviolet Spectrum of the First Spectroscopically Confirmed Supernova at Redshift Two. *The Astrophysical Journal*, 854:37. February, 2018.

Andersen, Morten [6]. The Core Mass Function in the Massive Protocluster G286.21+0.17 Revealed by ALMA. *The Astrophysical Journal*, 853:160. February, 2018.

Kim, Hwihyun [6]. Characterizing TW Hydra. *The Astrophysical Journal*, 853:120. February, 2018.

Dupuy, Trent [13]. Simultaneous Multiwavelength Variability Characterization of the Free-floating Planetary-mass Object PSO J318.5-22. *The Astronomical Journal*, 155:95. February, 2018.

Kim, H.[14]. The young star cluster population of M51 with LEGUS - I. A comprehensive study of cluster formation and evolution. *Monthly Notices of the Royal Astronomical Society*, 473:996-1018. January, 2018.

Goodsell, Stephen [27]; Rantakyrö, Fredrik T.[44]. Automated data processing architecture for the Gemini Planet Imager Exoplanet Survey. *Journal of Astronomical Telescopes*, 4:018002. January, 2018.

Roth, K. C.[19]. Hydrogen-poor Superluminous Supernovae from the Pan-STARRS1 Medium Deep Survey. *The Astrophysical Journal*, 852:81. January, 2018.

Schirmer, Mischa [4]. On the Nature of Ultra-faint Dwarf Galaxy Candidates. I. DES1, Eridanus III, and Tucana V. *The Astrophysical Journal*, 852:68. January, 2018.

B.2 Staff Non-Refereed Publications

Schwamb, Megan [6]. The Mass, Density, and Figure of the Kuiper Belt Dwarf Planet Makemake. *American Astronomical Society*, 50:509.02. October, 2018.

Roe, Henry [6]. Asteroid 3200 (Phaethon): Simultaneous Visible and Near-Infrared Observations. *American Astronomical Society*, 50:508.10. October, 2018.

Schwamb, Megan [10]. The mass and density of the dwarf planet 2007 OR10. *American Astronomical Society*, 50:311.02. October, 2018.

Roe, Henry [3]. Tightly-bound transneptunian binaries have prograde mutual orbits. *American Astronomical Society*, 50:305.01. October, 2018.

Schwamb, Megan [7]. Col-OSSOS: The Compositional Structure of the Protoplanetesimal Disk. *American Astronomical Society*, 50:302.04. October, 2018.

Xu, Siyi [6]. Spectral Variability of 1I/`Oumuamua. *American Astronomical Society*, 50:301.03. October, 2018.

Xu, Siyi [6]. Detailed Photometric Characterization of 'Oumuamua with Gemini North. *American Astronomical Society*, 50:301.02. October, 2018.

Schwamb, Megan E.[1]. Mapping Mars' Southern Springtime Winds and Seasonal Polar Fans with Planet Four. *American Astronomical Society*, 50:300.01. October, 2018.

Stephens, A. [3]. Wave activity in Jupiter's North Equatorial Belt from near-infrared reflectivity observations. *American Astronomical Society*, 50:214.09. October, 2018.

Miller, Bryan; Adamson, Andy; Stephens, Andrew; Nunez, Arturo. Gemini Operations for Non-sidereal Target Science. *American Astronomical Society*, 50:119.05. October, 2018.

Margheim, S.[12]. PanSTARRS1 Observations of the Kepler/K2 Campaign 16 and 17 Fields. *Research Notes of the American Astronomical Society*, 2:178. September, 2018.

Chené, André-Nicolas [1]. No Detection of Strange Mode Pulsations in Massive Prime Candidate. *Research Notes of the American Astronomical Society*, 2:168. September, 2018.

Schwamb, Megan E.[1]. Opportunities for the Large Synoptic Survey Telescope to Find New L5 Trojan and Hilda Lucy Encounter Targets. *Research Notes of the American Astronomical Society*, 2:159. September, 2018.

Blakeslee, John P.[1]. Independent Analysis of the Distance to NGC 1052-DF2. *Research Notes of the American Astronomical Society*, 2:146. August, 2018.

Hayward, Thomas [7]. TIKI: a 10-micron Earth-like planet finder for the Gemini South telescope. *Proceedings of the SPIE*, 0702:107024A. August, 2018.

Peck, Alison B.[1]. Masers and ALMA. *Astrophysical Masers: Unlocking the Mysteries of the Universe*, IAUS 336:405-410. August, 2018.

Labrie, Kathleen [5]; Simpson, Chris [8]. Data reduction software for the Gemini high resolution optical spectrograph. *Proceedings of the SPIE*, 0707:1070735. July, 2018.

Tait, Isabelle E. Risk management system at Gemini Observatory. *Proceedings of the SPIE*, 0705:1070508. July, 2018.

Peck, Alison B.[1]. Observatory Operations: Strategies, Processes, and Systems VII. *Observatory Operations: Strategies*, 0704. July, 2018.

Adamson, Andrew J.[2]. Sharing and optimizing operations and resources between Maunakea Observatories. *Proceedings of the SPIE*, 0704:107041R. July, 2018.

Peck, Alison B.[1]; Adamson, Andrew J.[2]; Kleinman, Scot J.[3]; Ferrarese, Laura[4]; Goodsell, Stephen J.[5]. Visiting instruments as part of a strategic plan. *Proceedings of the SPIE*, 0704:107041Q. July, 2018.

Margheim, S.[1]; Adamson, A.[2]; Nitta, A.[3]; Leggett, S.[4]; Rutten, R.[5]; Miller, B.[6]; Jørgensen, I.[7]; Andersen, M.[8]. Past and future evolution of Gemini operations. *Proceedings of the SPIE*, 0704:107041P. July, 2018.

Margheim, Steven J.[1]. The Gemini Observatory large and long programs. *Proceedings of the SPIE*, 0704:107041G. July, 2018.

Shugart, Alysha [1]; Yamasaki, Chris [6]. Diversity and inclusion in observatory operations: Advocating for and implementing positive change. *Proceedings of the SPIE*, 0704:107040J. July, 2018.

Miller, Bryan [6]. The SOAR Telescope as a node in a time domain followup-network: concepts and plans. *Proceedings of the SPIE*, 0704:107040B. July, 2018.

Hayward, Thomas L.[7]. Air, telescope, and instrument temperature effects on the Gemini Planet Imager's image quality. *Proceedings of the SPIE*, 0703:1070356. July, 2018.

Chirre, Emmanuel [1]; Moreno, Cristian [2]; Pérez, Gabriel [3]; Diaz, Pablo [4]; Sivo, Gaetano [5]; Marín, Eduardo [6]; Ebbers, Angelic [7]; Collins, Paul [8]; Vergara, Vicente [9]; Lazo, Manuel [10]; van der Hoeven, Michiel [12]. Switching between two laser guide star facilities: an overview of the optomechanical design for the new laser beam injector at the Gemini South Observatory. *Proceedings of the SPIE*, 0703:107033T. July, 2018.

Marin, Eduardo [1]; Sivo, Gaetano [2]; Andersen, Morten [3]; Carrasco, Rodrigo [4]; Moreno, Cristian [5]; Chirre, Emmanuel [6]; Lazo, Manuel [8]; Lombardi, Gianluca [9]. Confirmation of laser-induced Raman scattering at Cerro Pachón. *Proceedings of the SPIE*, 0703:107033S. July, 2018.

Marin, Eduardo [1]; Sivo, Gaetano [2]; Andersen, Morten [4]; Moreno, Cristian [8]; Chirre, Emmanuel [9]; Carrasco, Rodrigo [11]; Perez, Gabriel [13]; Diaz, Pablo[14]; Ebbers, Angelic[15]; Collins, Paul [16]; Vergara, Vicente [17]; Chavez, Joy [18]; Magill, Lindsay [19]; Lopez, Ariel [20]; van der Hoeven, Michiel [21]; Rutten, Rene[22]; Hirst, Paul [23]; Lazo, Manuel [24]. Dueling lasers! A comparative analysis of two different sodium laser technologies on sky. *Proceedings of the SPIE*, 0703:107033N. July, 2018.

Sivo, Gaetano [9]. The multi-object adaptive optics system for the GIRMOS spectrograph on Gemini-South. *Proceedings of the SPIE*, 0703:107031K. July, 2018.

Dupuy, T. J.[2]. Status of point spread function determination for Keck adaptive optics. *Proceedings of the SPIE*, 0703:107031J. July, 2018.

Sivo, Gaetano [1]; Marin, Eduardo [2]; Moreno, Cristian [7]; Chirre, Emmanuel [8]; Perez, Gabriel [11]; Diaz, Pablo [12]; Ebbers, Angelic [13]; Collins, Paul [14]; Vergara, Vicente [15]; Hirst, Paul [16]; Andersen, Morten [17]; Chavez, Joy [18]; Magill, Lindsay [19]; Cunningham, Christine [20]; Lopez, Ariel [21]; Donahue, Jeff [22]; Carrasco, Rodrigo [23]; Lombardi, Gianluca [24]; Montes, Vanessa [25]; van der Hoeven, Michiel [26]; Rutten, René [27]; Kleinman, Scot [28]; Lazo, Manuel [29]. An infusion of new blood using the Toptica laser with GeMS: results of the commissioning and science performance. *Proceedings of the SPIE*, 0703:107030P. July, 2018.

Sivo, Gaetano [9]. Gemini IRMOS: conceptual optical design of a multi-object adaptive optics-fed infrared integral-field spectrograph for the Gemini telescope. *Proceedings of the SPIE*, 0702:107027E. July, 2018.

Chinn, Brian [2]. BTFI2: a simple, light, and compact Fabry-Perot instrument for the SOAR telescope. *Proceedings of the SPIE*, 0702:1070257. July, 2018.

Rantakyrö, Fredrik T.[1]; Quiroz, Carlos [3]; Chinn, Brian [4]; Miller, Bryan W.[7]; Hayward, Thomas [8]; Morrison, Chris [12]. Moving the Gemini planet imager to Gemini North: expectations and challenges. *Proceedings of the SPIE*, 0702:1070240-. July, 2018.

Diaz, Ruben [1]; Goodsell, Stephen [2]; Kleinman, Scot [3]; Hirst, Paul [4]. Gemini instrument upgrade program. *Proceedings of the SPIE*, 0702:107023R. July, 2018.

Roe, Henry [7]. NIHTS: the near-infrared high throughput spectrograph for the Discovery Channel Telescope. *Proceedings of the SPIE*, 0702:107023E. July, 2018.

Sivo, Gaetano [4]; Marin, Eduardo [5]. GeMS/GSAOI: towards regular astrometric distortion correction. *Proceedings of the SPIE*, 0702:1070232. July, 2018.

Scharwächter, Julia [1]; Chiboucas, Kristin [2]; Gimeno, German [3]; Boucher, Luc [4]; White, John [5]; Tapia, Eduardo [6]; Lundquist, Michael [7]; Rippa, Mathew [8]; Lazo, Manuel [9]; Miller, Jennifer [10]; Labrie, Kathleen [11]; Kleinman, Scot J.[16]; Lührs, Javier [17]; Pohlen, Michael [18]; Stephens, Andrew [19]. Hamamatsu CCD upgrade for the Gemini multi-object spectrographs GMOS-S and GMOS-N: results from the 2017 GMOS-N upgrade and project completion summary. *Proceedings of the SPIE*, 0702:107022T. July, 2018.

Lemoine-Busserolle, Marie [23]; Peck, Alison [26]; Sivo, Gaetano [28]. Gemini infrared multi-object spectrograph: instrument overview. *Proceedings of the SPIE*, 0702:107021J. July, 2018.

Kim, Hwihyun [22]; Chinn, Brian[23]; Peck, Alison[24]; Diaz, Ruben[25]; Rutten, Rene[26]. IGRINS at the Discovery Channel Telescope and Gemini South. *Proceedings of the SPIE*, 0702:107020Q. July, 2018.

Goodsell, Stephen [16]; Radwick, Jeffrey [17]; Andersen, Morten [18]; Diaz, Ruben [19]; Lazo, Manuel [20]; Hayward, Thomas [21]; Kleinman, Scot [22]. SCORPIO: the Gemini facility instrument for LSST follow-up. *Proceedings of the SPIE*, 0702:107020I. July, 2018.

Schneider, T.[1]. A UV-enhanced protected silver coating for the Gemini telescopes. *Proceedings of the SPIE*, 0700:1070048. July, 2018.

Cavedoni, Chas[2]. Upgrade of the CFHT closed-cycle cooling heat-rejection process. *Proceedings of the SPIE*, 0700:107002U. July, 2018.

Margheim, S.[7]. Transient Discovery Report for 2018-07-17. *Transient Name Server Discovery Report*, 993:A75-410. July, 2018.

Xu, Siyi. Multi-Wavelength Photometric Study of the Transits of an Extrasolar Asteroid. *Diversis Mundi: The Solar System in an Exoplanetary Context*, id.32. July, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-06-12. *Transient Name Server Discovery Report*, 803:A135-10218. June, 2018.

Stephens, Andrew [1]; Quiroz, Carlos[2]. Gemini Proposal Tools. *Proposal Submission Tools Workshop*, 803:6-. June, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-05-14. *Transient Name Server Discovery Report*, 634:A94-8744. May, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-05-07. *Transient Name Server Discovery Report*, 589. May, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-05-06. *Transient Name Server Discovery Report*, 583. May, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-05-02. *Transient Name Server Discovery Report*, 569. May, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-04-28. *Transient Name Server Discovery Report*, 558:23-305. April, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-04-27. *Transient Name Server Discovery Report*, 554. April, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-04-21. *Transient Name Server Discovery Report*, 521. April, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-04-16. *Transient Name Server Discovery Report*, 499. April, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-04-14. *Transient Name Server Discovery Report*, 492. April, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-04-09. *Transient Name Server Discovery Report*, 462. April, 2018.

Schwamb, Megan E.[3]. Planet Four: Probing Seasonal Winds on Mars by Mapping the Southern Polar CO2 Jet Deposits. *20th EGU General Assembly*, 20:11432. April, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-03-24. *Transient Name Server Discovery Report*, 391:5967-5989. March, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-03-19. *Transient Name Server Discovery Report*, 367. March, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-03-16. *Transient Name Server Discovery Report*, 349. March, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-03-15. *Transient Name Server Discovery Report*, 346. March, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-03-11. *Transient Name Server Discovery Report*, 333. March, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-03-10. *Transient Name Server Discovery Report*, 330. March, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-02-27. *Transient Name Server Discovery Report*, 275. February, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-02-25. *Transient Name Server Discovery Report*, 268. February, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-02-21. *Transient Name Server Discovery Report*, 252. February, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-02-14. *Transient Name Server Discovery Report*, 220. February, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-02-14. *Transient Name Server Discovery Report*, 216. February, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-02-09. *Transient Name Server Discovery Report*, 183. February, 2018.

Margheim, S.[6]. Transient Discovery Report for 2018-02-04. *Transient Name Server Discovery Report*, 149. February, 2018.

Margheim, S.[6]. Rest, A. et al. Transient Discovery Report for 2018-02-01. *Transient Name Server Discovery Report*, 140. February, 2018.

Margheim, S.[18]. Pan-STARRS1 Transient Discovery Report for 2018-01-16. *Transient Name Server Discovery Report*, 72. January, 2018.

Salinas, Ricardo [7]. Orbital Dynamics of Candidate Transitional Millisecond Pulsar 3FGL J1544.6-1125: An unusually face-on system. *American Astronomical Society*, 231:453.06. January, 2018.

Lundquist, Michael [1]. Gemini Spectroscopic Survey of Young Intermediate-Mass Star-Forming Regions. *American Astronomical Society*, 231:448.01. January, 2018.

Margheim, Steven [10]. A Fast-Evolving, Luminous Transient Discovered by K2/Kepler. *American Astronomical Society*, 231:446.06. January, 2018.

Kim, Hwihyun [3]. Extinction Mapping and Dust-to-Gas Ratios of Nearby Galaxies using LEGUS. *American Astronomical Society*, 231:445.02. January, 2018.

Sanmartim, David [1]. STELLAR POPULATION AND GAS KINEMATICS OF POST-STARBURST QUASARS. *American Astronomical Society*, 231:440.15. January, 2018.

Hayward, Thomas L.[4]. Air, telescope, and instrument temperature effects on the Gemini Planet Imager's image quality. *American Astronomical Society*, 231:361.18. January, 2018.

Stark, Chris S.[5]. How Does Hawai'i Really Feel about the Thirty Meter Telescope? *American Astronomical Society*, 231:360.09. January, 2018.

Andersen, Morten; Chiboucas, Kristin; Geballe, Tom; Salinas, Ricardo; Silva, Karleyne; Sanmartim, David; Lundquist, Michael; Scharwaechter, Julia; Schirmer, Mischa; Eckersley, Jared. Gemini Fast Turnaround proposals: From proposal to data in less than four months. *American Astronomical Society*, 231:354.30. January, 2018.

Dupuy, Trent [2]. Measuring the Substellar Boundary. *American Astronomical Society*, 231:349.34. January, 2018.

Andersen, Morten [6]. How to find and type red/brown dwarf stars in near-infrared imaging space observatories. *American Astronomical Society*, 231:349.32. January, 2018.

Dupuy, Trent [4]. A Volume-Limited Sample of L and T Dwarfs Defined by Parallaxes. *American Astronomical Society*, 231:349.19. January, 2018.

Dupuy, Trent [12]. The Snapshot A Star SurveY (SASSY). *American Astronomical Society*, 231:349.07. January, 2018.

Roth, Katherine [10]. Long-term Ultraviolet Monitoring of a Tidal Disruption Event at only 90 Mpc. *American Astronomical Society*, 231:347.22. January, 2018.

Chiboucas, Kristin [1]. The Nature and Origin of UCDs in the Coma Cluster. *American Astronomical Society*, 231:344.16. January, 2018.

Andersen, Morten [11]. A Complete Census of the ~7000 Milky Way HII Regions. *American Astronomical Society*, 231:331.02. January, 2018.

Carrasco, Eleazar [8]. Finding the Progenitors to Today's Fossil Systems. *American Astronomical Society*, 231:309.06. January, 2018.

Rodrigo Carrasco Damele, Eleazar [1]. Revisiting the monster: the mass profile of the galaxy cluster Abell 3827 using dynamical and strong lensing constrains. *American Astronomical Society*, 231:258.08. January, 2018.

Stark, Chris [5]. Local Community Advocacy for the Thirty Meter Telescope on the Big Island of Hawai'i. *American Astronomical Society*, 231:232.03. January, 2018.

Bergmann, M.[6]. Results and lessons from the GMOS survey of transiting exoplanet atmospheres. *American Astronomical Society*, 231:228.07. January, 2018.

Dupuy, Trent [3]. The Impact of Binary Companions on Planetary Systems. *American Astronomical Society*, 231:148.12. January, 2018.

Dupuy, Trent [1]. Tests of Substellar Astrophysics Enabled by Dynamical Masses. *American Astronomical Society*, 231:133.07. January, 2018.

Schwamb, Megan E.[1]. Colours of the Outer Solar System Origins Survey: An Update. *American Astronomical Society*, 231:115.03. January, 2018.

Salinas, Ricardo. The overlooked role of stellar variability in LMC intermediate-age clusters. *Memorie della Societa Astronomica Italiana*, 89:101. 2018.

Leggett, Sandy K. Y Dwarfs: The Challenge of Discovering the Coldest Substellar Population in the Solar Neighborhood. *Handbook of Exoplanets*, 89:187. 2018.

Appendix C. Publications by Users

See notes for methodology.[6, 7]

González, Nélida M.; Smith Castelli, Analía V.; Faifer, Favio R.; Escudero, Carlos G.; Cellone, Sergio A. Stellar systems in the direction of Pegasus I. I. Low surface brightness galaxies. . *Astronomy and Astrophysics*, 620:A166, 12/2018.

Leggett, S. K., Bergeron, P., Subasavage, J. P., Dahn, C. C., Harris, H. C., Munn, J. A., Ables, H. D., Canzian, B. J., Guetter, H. H., Henden, A. H., Levine, S. E., Luginbuhl, C. B., Monet, A. B., Monet, D. G., Pier, J. R., Stone, R. C., Vrba, F. J., Walker, R. L., Tilleman, T. M., Xu, S., Dufour, P. Distant White Dwarfs in the US Naval Observatory Flagstaff Station Parallax Sample. *The Astrophysical Journal Supplement Series*, 239:26, 12/2018.

Miles, Brittany E.; Skemer, Andrew J.; Barman, Travis S.; Allers, Katelyn N.; Stone, Jordan M. Methane in Analogs of Young Directly Imaged Exoplanets. *The Astrophysical Journal*, 869:18, 12/2018.

Cosens, M., Wright, S. A., Mieda, E., Murray, N., Armus, L., Do, T., Larkin, J. E., Larson, K., Martinez, G., Walth, G., Vayner, A. Size-Luminosity scaling relations of local and distant star-forming regions. *The Astrophysical Journal*, 869:11, 12/2018.

Wang, F., Yang, J., Fan, X., Yue, M., Wu, X., Schindler, J., Bian, F., Li, J., Farina, Emanuele P., Bañados, E., Davies, Frederick B., Decarli, R., Green, R., Jiang, L., Hennawi, J. F., Huang, Y., Mazzucchelli, C., McGreer, I. D., Venemans, B., Walter, F., Yuri, B. The Discovery of a Luminous Broad Absorption Line Quasar at a Redshift of 7.02. *The Astrophysical Journal Letters*, 869:9, 12/2018.

Eyres, S. P. S., Evans, A., Zijlstra, A., Avison, A., Gehrz, R. D., Hajduk, M., Starrfield, S., Mohamed, S., Woodward, C. E., Wagner, R. M. ALMA reveals the aftermath of a white dwarf-brown dwarf merger in CK Vulpeculae. *Monthly Notices of the Royal Astronomical Society*, 481:4931-4939, 12/2018.

Jauzac, M.; Eckert, D.; Schaller, M.; Schwinn, J.; Massey, R.; Bahé, Y.; Baugh, C.; Barnes, D.; Dalla Vecchia, C.; Ebeling, H.; Harvey, D.; Jullo, E.; Kay, S. T.; Kneib, J.-P.; Limousin, M.; Medezinski, E.; Natarajan, P.; Nonino, M.; Robertson, A.; Tam, S. I.; Umetsu, K. Growing a `cosmic beast': observations and simulations of MACS J0717.5+3745. . *Monthly Notices of the Royal Astronomical Society*, 481:2901-2917, 12/2018.

Livingston, J. H., Crossfield, I. J. M., Petigura, E. A., Gonzales, E. J., Ciardi, D. R., Beichman, C. A., Christiansen, J. L., Dressing, C. D., Henning, T., Howard, A. W., Isaacson, H., Fulton, B. J., Kosiarek, M., Schlieder, J. E., Sinukoff, E., Tamura, M. Sixty Validated Planets from K2 Campaigns 5–8. *The Astronomical Journal*, 156:277, 12/2018.

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[6] *Gemini maintains an up-to-date database of papers based wholly or in part on Gemini data that appear in the main refereed astronomical research journals. These journals consist of: The Astrophysical Journal, The Astronomical Journal, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, Publications of the Astronomical Society of the Pacific, Icarus, Science and Nature. In a few exceptional and well-assessed cases, we also count papers from "secondary" journals.*

[7] *Gemini's qualifying criterion is the same as that used by Hubble Space Telescope and European Southern Observatory. To qualify, papers based on their output, must employ in an original way an image, spectrum or data set produced by Gemini to derive new scientific results. No attempt is made to fractionate papers per telescope used in the case of papers based on the use of two or more other facilities. Hence, the same paper may be counted several times, for example by Gemini, Keck and Subaru, if it includes data from any of these telescopes.*

Arias, M. L., Cidale, L. S., Kraus, M., Torres, A. F., Aidelman, Y., Zorec, J., Granada, A. Near-infrared Spectra of a Sample of Galactic Unclassified B[e] Stars. *Publications of the Astronomical Society of the Pacific*, 130:114201, 11/2018.

Riffel, R. A., Hekatelyne, C., Freitas, I. C. Outflows in the Seyfert 2 galaxy NGC 5643 traced by the [S III] emission. *Publications of the Astronomical Society of Australia*, 35:40, 11/2018.

Shu, Y., Marques-Chaves, R., Evans, N. W., Pérez-Fournon, I. SDSS J0909+4449: A large-separation strongly lensed quasar at z ˜ 2.8 with three images. *Monthly Notices of the Royal Astronomical Society*, 481:L136-L140, 11/2018.

Monteiro-Oliveira, R., Cypriano, E. S., Vitorelli, A. Z., Ribeiro, A. L. B., Sodré, L., Dupke, R., Mendes de Oliveira, C. New insights on the dissociative merging galaxy cluster Abell 2034. *Monthly Notices of the Royal Astronomical Society*, 481:1097-1114, 11/2018.

Treu, T., Agnello, A., Baumer, M. A., Birrer, S., Buckley-Geer, E. J., Courbin, F., Kim, Y. J., Lin, H., Marshall, P. J., Nord, B., Schechter, P. L., Sivakumar, P. R., Abramson, L. E., Anguita, T., Apostolovski, Y., Auger, M. W., Chan, J. H. H., Chen, G. C. F., Collett, T. E., Fassnacht, C. D., Hsueh, J.-W., Lemon, C., McMahon, R. G., Motta, V., Ostrovski, F., Rojas, K., Rusu, C. E., Williams, P., Frieman, J., Meylan, G., Suyu, S. H., Abbott, T. M. C., Abdalla, F. B., Allam, S., Annis, J., Avila, S., Banerji, M., Brooks, D., Carnero Rosell, A., Carrasco Kind, M., Carretero, J., Castander, F. J., D'Andrea, C. B., da Costa, L. N., De Vicente, J., Doel, P., Eifler, T. F., Flaugher, B., Fosalba, P., García-Bellido, J., Goldstein, D. A., Gruen, D., Gruendl, R. A., Gutierrez, G., Hartley, W. G., Hollowood, D., Honscheid, K., James, D. J., Kuehn, K., Kuropatkin, N., Lima, M., Maia, M. A. G., Martini, P., Menanteau, F., Miquel, R., Plazas, A. A., Romer, A. K., Sanchez, E., Scarpine, V., Schindler, R., Schubnell, M., Sevilla-Noarbe, I., Smith, M., Smith, R. C., Soares-Santos, M., Sobreira, F., Suchyta, E., Swanson, M. E. C., Tarle, G., Thomas, D., Tucker, D. L., Walker, A. R. The STRong lensing Insights into the Dark Energy Survey (STRIDES) 2016 follow-up campaign - I. Overview and classification of candidates selected by two techniques. *Monthly Notices of the Royal Astronomical Society*, 481:1041-1054, 11/2018.

Carvalho, M. S., Plana, H. Internal kinematics of UM 461 and CTS 1020. *Monthly Notices of the Royal Astronomical Society*, 481:122-137, 11/2018.

Piatti, A. E., Hwang, N., Cole, A. A., Angelo, M. S., Emptage, B. Accurate radial velocity and metallicity of the Large Magellanic Cloud old globular clusters NGC 1928 and NGC 1939. *Monthly Notices of the Royal Astronomical Society*, 481:49-58, 11/2018.

Kourniotis, M., Kraus, M., Arias, M. L., Cidale, L., Torres, A. F. On the evolutionary state of massive stars in transition phases in M33. *Monthly Notices of the Royal Astronomical Society*, 480:3706-3717, 11/2018.

Muñoz-Elgueta, N., Torres-Flores, S., Amram, P., Hernandez-Jimenez, J. A., Urrutia-Viscarra, F., Mendes de Oliveira, C., Gómez-López, J. A. Kinematics and physical properties of the nearby galaxy NGC 4656 and its TDG candidate. *Monthly Notices of the Royal Astronomical Society*, 480:3257-3278, 11/2018.

Menezes, R. B., Steiner, J. E. Double Nuclei in NGC 908 and NGC 1187. *The Astrophysical Journal*, 868:67, 11/2018.

Mahony, E. K., Ekers, R. D., Macquart, J.-P., Sadler, E. M., Bannister, K. W., Bhandari, S., Flynn, C., Koribalski, B. S., Prochaska, J. X., Ryder, S. D., Shannon, R. M., Tejos, N., Whiting, M. T., Wong, O. I. A Search for the Host Galaxy of FRB 171020. *The Astrophysical Journal*, 867:L10, 11/2018.

Pitts, R. L., Barnes, P. J., Ryder, S. D., Li, D. Gemini, SOFIA, and ATCA Reveal Very Young, Massive Protostars in the Collapsing Molecular Cloud BYF 73. *The Astrophysical Journal*, 867:L7, 11/2018.

Schlaufman, K. C., Thompson, I. B., Casey, A. R. An Ultra Metal-poor Star Near the Hydrogen-burning Limit. *The Astrophysical Journal*, 867:98, 11/2018.

Logsdon, S. E., Mace, G. N., McLean, I. S., Martin, E. C. Probing Late-type T Dwarf J - H Color Outliers for Signs of Age. *The Astrophysical Journal*, 867:96, 11/2018.

Comerford, J. M., Nevin, R., Stemo, A., Müller-Sánchez, F., Barrows, R. S., Cooper, M. C., Newman, J. A. The Origin of Double-peaked Narrow Lines in Active Galactic Nuclei. IV. Association with Galaxy Mergers. *The Astrophysical Journal*, 867:66, 11/2018.

Eilers, A.-C., Hennawi, J. F., Davies, F. B. First Spectroscopic Study of a Young Quasar. *The Astrophysical Journal*, 867:30, 11/2018.

Davidge, T. J. The Stellar Contents of Intermediate-mass Disk Galaxies in the Virgo Cluster. I. GMOS Spectra. *The Astronomical Journal*, 156:233, 11/2018.

Jørgensen, I., Chiboucas, K., Webb, K., Woodrum, C. The Gemini/Hubble Space Telescope Galaxy Cluster Project: Stellar Populations in the Low-redshift Reference Cluster Galaxies. *The Astronomical Journal*, 156:224, 11/2018.

Hsieh, H. H., Ishiguro, M., Kim, Y., Knight, M. M., Lin, Z.-Y., Micheli, M., Moskovitz, N. A., Sheppard, S. S., Thirouin, A., Trujillo, C. A. The 2016 Reactivations of the Main-belt Comets 238P/Read and 288P/(300163) 2006 VW_{139}. *The Astronomical Journal*, 156:223, 11/2018.

Wang, J. J., Graham, J. R., Dawson, R., Fabrycky, D., De Rosa, R. J., Pueyo, L., Konopacky, Q., Macintosh, B., Marois, C., Chiang, E., Ammons, S. M., Arriaga, P., Bailey, V. P., Barman, T., Bulger, J., Chilcote, J., Cotten, T., Doyon, R., Duchêne, G., Esposito, T. M., Fitzgerald, M. P., Follette, K. B., Gerard, B. L., Goodsell, S. J., Greenbaum, A. Z., Hibon, P., Hung, L.-W., Ingraham, P., Kalas, P., Larkin, J. E., Maire, J., Marchis, F., Marley, M. S., Metchev, S., Millar-Blanchaer, M. A., Nielsen, E. L., Oppenheimer, R., Palmer, D., Patience, J., Perrin, M., Poyneer, L., Rajan, A., Rameau, J., Rantakyrö, F. T., Ruffio, J.-B., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., Wolff, S. Dynamical Constraints on the HR 8799 Planets with GPI. *The Astronomical Journal*, 156:192, 11/2018.

Docobo, J. A., Campo, P. P., Gomez, J., Horch, E. P. The Three-dimensional Orbit, Orbital Parallax, and Individual Masses of the Double-lined Spectroscopic Binaries HD 183255, HD 114882, and HD 30712. *The Astronomical Journal*, 156:185, 11/2018.

Anderson, J. P.; Pessi, P. J.; Dessart, L.; Inserra, C.; Hiramatsu, D.; Taggart, K.; Smartt, S. J.; Leloudas, G.; Chen, T.-W.; Möller, A.; Roy, R.; Schulze, S.; Perley, D.; Selsing, J.; Prentice, S. J.; Gal-Yam, A.; Angus, C. R.; Arcavi, I.; Ashall, C.; Bulla, M.; Bray, C.; Burke, J.; Callis, E.; Cartier, R.; Chang, S.-W.; Chambers, K.; Clark, P.; Denneau, L.; Dennefeld, M.; Flewelling, H.; Fraser, M.; Galbany, L.; Gromadzki, M.; Gutiérrez, C. P.; Heinze, A.; Hosseinzadeh, G.; Howell, D. A.; Hsiao, E. Y.; Kankare, E.; Kostrzewa-Rutkowska, Z.; Magnier, E.; Maguire, K.; Mazzali, P.; McBrien, O.; McCully, C.; Morrell, N.; Lowe, T. B.; Onken, C. A.; Onori, F.; Phillips, M. M.; Rest, A.; Ridden-Harper, R.; Ruiter, A. J.; Sand, D. J.; Smith, K. W.; Smith, M.; Stalder, B.; Stritzinger, M. D.; Sullivan, M.; Tonry, J. L.; Tucker, B. E.; Valenti, S.; Wainscoat, R.; Waters, C. Z.; Wolf, C.; Young, D. A nearby super-luminous supernova with a long pre-maximum & "plateau" and strong C II features. *Astronomy and Astrophysics*, 620:A67, 11/2018.

Dhawan, S., Flörs, A., Leibundgut, B., Maguire, K., Kerzendorf, W., Taubenberger, S., Van Kerkwijk, M. H., Spyromilio, J. Nebular spectroscopy of SN 2014J: Detection of stable nickel in near-infrared spectra. *Astronomy and Astrophysics*, 619:A102, 11/2018.

De, K., Kasliwal, M. M., Ofek, E. O., Moriya, T. J., Burke, J., Cao, Y., Cenko, S. B., Doran, G. B., Duggan, G. E., Fender, R. P., Fransson, C., Gal-Yam, A., Horesh, A., Kulkarni, S. R., Laher, R. R., Lunnan, R., Manulis, I., Masci, F., Mazzali, P. A., Nugent, P. E., Perley, D. A., Petrushevska, T., Piro, A. L., Rumsey, C., Sollerman, J., Sullivan, M., Taddia, F. A hot and fast ultra-stripped supernova that likely formed a compact neutron star binary. *Science*, 362:201-206, 10/2018.

Niino, Y., Tominaga, N., Totani, T., Morokuma, T., Keane, E., Possenti, A., Sugai, H., Yamasaki, S. A search for optical transients associated with fast radio burst 150418[†‡]. *Publications of the Astronomical Society of Japan*, 70:L7, 10/2018.

Troja, E., Ryan, G., Piro, L., van Eerten, H., Cenko, S. B., Yoon, Y., Lee, S.-K., Im, M., Sakamoto, T., Gatkine, P., Kutyrev, A., Veilleux, S. A luminous blue kilonova and an off-axis jet from a compact binary merger at z = 0.1341. *Nature Communications*, 9:4089, 10/2018.

Saxena, A., Marinello, M., Overzier, R. A., Best, P. N., Röttgering, H. J. A., Duncan, K. J., Prandoni, I., Pentericci, L., Magliocchetti, M., Paris, D., Cusano, F., Marchi, F., Intema, H. T., Miley, G. Discovery of a radio galaxy at z = 5.72. *Monthly Notices of the Royal Astronomical Society*, 480:2733-2742, 10/2018.

Lee-Waddell, K., Madrid, J. P., Spekkens, K., Donzelli, C. J., Koribalski, B. S., Serra, P., Cannon, J. Optical spectroscopy of young tidal objects around two interacting galaxy pairs. *Monthly Notices of the Royal Astronomical Society*, 480:2719-2725, 10/2018.

Molina Lera, J. A., Baume, G., Gamen, R. Young star clusters and the structure of the second Galactic quadrant. *Monthly Notices of the Royal Astronomical Society*, 480:2386-2404, 10/2018.

Smith, N., Andrews, J. E., Rest, A., Bianco, F. B., Prieto, J. L., Matheson, T., James, D. J., Smith, R. C., Strampelli, G. M., Zenteno, A. Light echoes from the plateau in Eta Carinae's Great Eruption reveal a two-stage shock-powered event. *Monthly Notices of the Royal Astronomical Society*, 480:1466-1498, 10/2018.

Smith, N., Rest, A., Andrews, J. E., Matheson, T., Bianco, F. B., Prieto, J. L., James, D. J., Smith, R. C., Strampelli, G. M., Zenteno, A. Exceptionally fast ejecta seen in light echoes of Eta Carinae's Great Eruption. *Monthly Notices of the Royal Astronomical Society*, 480:1457-1465, 10/2018.

Maravelias, G., Kraus, M., Cidale, L. S., Borges Fernandes, M., Arias, M. L., Curé, M., Vasilopoulos, G. Resolving the kinematics of the discs around Galactic B[e] supergiants. *Monthly Notices of the Royal Astronomical Society*, 480:320-344, 10/2018.

Alexandroff, R. M., Zakamska, N. L., Barth, A. J., Hamann, F., Strauss, M. A., Krolik, J., Greene, J. E., Pâris, I., Ross, N. P. Spectropolarimetry of high-redshift obscured and red quasars. *Monthly Notices of the Royal Astronomical Society*, 479:4936-4957, 10/2018.

Forbes, D. A., Remus, R.-S. Metallicity gradients in the globular cluster systems of early-type galaxies: in situ and accreted components?. *Monthly Notices of the Royal Astronomical Society*, 479:4760-4769, 10/2018.

Kim, D., Im, M., Canalizo, G., Kim, M., Kim, J. H., Woo, J.-H., Taak, Y. C., Kim, J.-W., Lazarova, M. Medium-resolution Optical and Near-infrared Spectral Atlas of 16 2MASS-selected NIR-red Active Galactic Nuclei at z ∼ 0.3. *The Astrophysical Journal Supplement Series*, 238:37, 10/2018.

Madrid, J. P., Donzelli, C. J., Rodríguez-Ardila, A., Paggi, A., Massaro, F., Schirmer, M. 3C 17: The BCG of a Galaxy Cluster at z = 0.22. *The Astrophysical Journal Supplement Series*, 238:31, 10/2018.

Greco, J. P., Goulding, A. D., Greene, J. E., Strauss, M. A., Huang, S., Kim, J. H., Komiyama, Y. A Study of Two Diffuse Dwarf Galaxies in the Field. *The Astrophysical Journal*, 866:112, 10/2018.

Monty, S., Puzia, T. H., Miller, B. W., Carrasco, E. R., Simunovic, M., Schirmer, M., Stetson, P. B., Cassisi, S., Venn, K. A., Dotter, A., Goudfrooij, P., Perina, S., Pessev, P., Sarajedini, A., Taylor, M. A. The GeMS/GSAOI Galactic Globular Cluster Survey (G4CS). I. A Pilot Study of the Stellar Populations in NGC 2298 and NGC 3201. *The Astrophysical Journal*, 865:160, 10/2018.

Tanvir, N. R., Laskar, T., Levan, A. J., Perley, D. A., Zabl, J., Fynbo, J. P. U., Rhoads, J., Cenko, S. B., Greiner, J., Wiersema, K., Hjorth, J., Cucchiara, A., Berger, E., Bremer, M. N., Cano, Z., Cobb, B. E., Covino, S., D'Elia, V., Fong, W., Fruchter, A. S., Goldoni, P., Hammer, F., Heintz, K. E., Jakobsson, P., Kann, D. A., Kaper, L., Klose, S., Knust, F., Krühler, T., Malesani, D., Misra, K., Nicuesa Guelbenzu, A., Pugliese, G., Sánchez-Ramírez, R., Schulze, S., Stanway, E. R., de Ugarte Postigo, A., Watson, D., Wijers, R. A. M. J., Xu, D. The Properties of GRB 120923A at a Spectroscopic Redshift of z ≈ 7.8. *The Astrophysical Journal*, 865:107, 10/2018.

Lazorenko, P. F., Sahlmann, J. Updated astrometry and masses of the LUH 16 brown dwarf binary. *Astronomy and Astrophysics*, 618:A111, 10/2018.

Hekatelyne, C., Riffel, R. A., Sales, D., Robinson, A., Storchi-Bergmann, T., Kharb, P., Gallimore, J., Baum, S., O'Dea, C. Star formation and gas inflows in the OH megamaser galaxy IRAS03056+2034. *Monthly Notices of the Royal Astronomical Society*, 479:3966-3977, 9/2018.

Finlez, C., Nagar, N. M., Storchi-Bergmann, T., Schnorr-Müller, A., Riffel, R. A., Lena, D., Mundell, C. G., Elvis, M. S. The complex jet- and bar-perturbed kinematics in NGC 3393 as revealed with ALMA and GEMINI-GMOS/IFU. *Monthly Notices of the Royal Astronomical Society*, 479:3892-3908, 9/2018.

Kilic, M., Hermes, J. J., Córsico, A. H., Kosakowski, A., Brown, W. R., Antoniadis, J., Calcaferro, L. M., Gianninas, A., Althaus, L. G., Green, M. J. A refined search for pulsations in white dwarf companions to millisecond pulsars. *Monthly Notices of the Royal Astronomical Society*, 479:1267-1272, 9/2018.

Sesto, L. A., Faifer, F. R., Smith Castelli, A. V., Forte, J. C., Escudero, C. G. Young globular clusters in NGC 1316. *Monthly Notices of the Royal Astronomical Society*, 479:478-494, 9/2018.

Cantrall, C., de Kleer, K., de Pater, I., Williams, D. A., Davies, A. G., Nelson, D. Variability and geologic associations of volcanic activity on Io in 2001-2016. *Icarus*, 312:267-294, 9/2018.

Blanchard, P. K., Nicholl, M., Berger, E., Chornock, R., Margutti, R., Milisavljevic, D., Fong, W., MacLeod, C., Bhirombhakdi, K. The Type I Superluminous Supernova PS16aqv: Lightcurve Complexity and Deep Limits on Radioactive Ejecta in a Fast Event. *The Astrophysical Journal*, 865:9, 9/2018.

Posselt, B., Pavlov, G. G., Ertan, Ü., Çalışkan, S., Luhman, K. L., Williams, C. C. Discovery of Extended Infrared Emission around the Neutron Star RXJ0806.4–4123. *The Astrophysical Journal*, 865:1, 9/2018.

Rho, J., Geballe, T. R., Banerjee, D. P. K., Dessart, L., Evans, A., Joshi, V. Near-infrared Spectroscopy of Supernova 2017eaw in 2017: Carbon Monoxide and Dust Formation in a Type II-P Supernova. *The Astrophysical Journal*, 864:L20, 9/2018.

Davies, F. B., Hennawi, J. F., Bañados, E., Simcoe, R. A., Decarli, R., Fan, X., Farina, E. P., Mazzucchelli, C., Rix, H.-W., Venemans, B. P., Walter, F., Wang, F., Yang, J. Predicting Quasar Continua near Lyα with Principal Component Analysis. *The Astrophysical Journal*, 864:143, 9/2018.

Davies, F. B., Hennawi, J. F., Bañados, E., Lukić, Z., Decarli, R., Fan, X., Farina, E. P., Mazzucchelli, C., Rix, H.-W., Venemans, B. P., Walter, F., Wang, F., Yang, J. Quantitative Constraints on the Reionization History from the IGM Damping Wing Signature in Two Quasars at z > 7. *The Astrophysical Journal*, 864:142, 9/2018.

Kang, D., Woo, J.-H. Unraveling the Complex Structure of AGN-driven Outflows. III. The Outflow Size–Luminosity Relation. *The Astrophysical Journal*, 864:124, 9/2018.

Cain, M., Frebel, A., Gull, M., Ji, A. P., Placco, V. M., Beers, T. C., Meléndez, J., Ezzeddine, R., Casey, A. R., Hansen, T. T., Roederer, I. U., Sakari, C. The R-Process Alliance: Chemical Abundances for a Trio of r-process-enhanced Stars—One Strong, One Moderate, and One Mild. *The Astrophysical Journal*, 864:43, 9/2018.

Kaplan, D. L., Stovall, K., van Kerkwijk, M. H., Fremling, C., Istrate, A. G. A Dense Companion to the Short-period Millisecond Pulsar Binary PSR J0636+5128. *The Astrophysical Journal*, 864:15, 9/2018.

Lacy, M., Nyland, K., Mao, M., Jagannathan, P., Pforr, J., Ridgway, S. E., Afonso, J., Farrah, D., Guarnieri, P., Gonzales-Solares, E., Jarvis, M. J., Maraston, C., Nielsen, D. M., Petric, A. O., Sajina, A., Surace, J. A., Vaccari, M. A Subarcsecond Near-infrared View of Massive Galaxies at z > 1 with Gemini Multi-conjugate Adaptive Optics. *The Astrophysical Journal*, 864:8, 9/2018.

Baron, F., Artigau, É., Rameau, J., Lafrenière, D., Gagné, J., Malo, L., Albert, L., Naud, M.-E., Doyon, R., Janson, M., Delorme, P., Beichman, C. WEIRD: Wide-orbit Exoplanet Search with InfraRed Direct Imaging. *The Astronomical Journal*, 156:137, 9/2018.

Yuan, W., Macri, L. M., Javadi, A., Lin, Z., Huang, J. Z. Near-infrared Mira Period–Luminosity Relations in M33. *The Astronomical Journal*, 156:112, 9/2018.

Müller, A.; Keppler, M.; Henning, Th.; Samland, M.; Chauvin, G.; Beust, H.; Maire, A.-L.; Molaverdikhani, K.; van Boekel, R.; Benisty, M.; Boccaletti, A.; Bonnefoy, M.; Cantalloube, F.; Charnay, B.; Baudino, J.-L.; Gennaro, M.; Long, Z. C.; Cheetham, A.; Desidera, S.; Feldt, M.; Fusco, T.; Girard, J.; Gratton, R.; Hagelberg, J.; Janson, M.; Lagrange, A.-M.; Langlois, M.; Lazzoni, C.; Ligi, R.; Ménard, F.; Mesa, D.; Meyer, M.; Mollière, P.; Mordasini, C.; Moulin, T.; Pavlov, A.; Pawellek, N.; Quanz, S. P.; Ramos, J.; Rouan, D.; Sissa, E.; Stadler, E.; Vigan, A.; Wahhaj, Z.; Weber, L.; Zurlo, A. Orbital and atmospheric characterization of the planet within the gap of the PDS 70 transition disk. *Astronomy and Astrophysics*, 617:L2, 9/2018.

Ramsay, G., Marsh, T. R., Kupfer, T., Dhillon, V. S., Steeghs, D., Woudt, P., Groot, P. Detection of a 23.6 min periodic modulation in the optical counterpart of 3XMMJ051034.6-670353. *Astronomy and Astrophysics*, 617:A88, 9/2018.

Keppler, M., Benisty, M., Müller, A., Henning, T., van Boekel, R., Cantalloube, F., Ginski, C., van Holstein, R. G., Maire, A.-L., Pohl, A., Samland, M., Avenhaus, H., Baudino, J.-L., Boccaletti, A., de Boer, J., Bonnefoy, M., Chauvin, G., Desidera, S., Langlois, M., Lazzoni, C., Marleau, G.-D., Mordasini, C., Pawellek, N., Stolker, T., Vigan, A., Zurlo, A., Birnstiel, T., Brandner, W., Feldt, M., Flock, M., Girard, J., Gratton, R., Hagelberg, J., Isella, A., Janson, M., Juhasz, A., Kemmer, J., Kral, Q., Lagrange, A.-M., Launhardt, R., Matter, A., Ménard, F., Milli, J., Mollière, P., Olofsson, J., Pérez, L., Pinilla, P., Pinte, C., Quanz, S. P., Schmidt, T., Udry, S., Wahhaj, Z., Williams, J. P., Buenzli, E., Cudel, M., Dominik, C., Galicher, R., Kasper, M., Lannier, J., Mesa, D., Mouillet, D., Peretti, S., Perrot, C., Salter, G., Sissa, E., Wildi, F., Abe, L., Antichi, J., Augereau, J.-C., Baruffolo, A., Baudoz, P., Bazzon, A., Beuzit, J.-L., Blanchard, P., Brems, S. S., Buey, T., De Caprio, V., Carbillet, M., Carle, M., Cascone, E., Cheetham, A., Claudi, R., Costille, A., Delboulbé, A., Dohlen, K., Fantinel, D., Feautrier, P., Fusco, T., Giro, E., Gluck, L., Gry, C., Hubin, N., Hugot, E., Jaquet, M., Le Mignant, D., Llored, M., Madec, F., Magnard, Y., Martinez, P., Maurel, D., Meyer, M., Möller-Nilsson, O., Moulin, T., Mugnier, L., Origné, A., Pavlov, A., Perret, D., Petit, C., Pragt, J., Puget, P., Rabou,

P., Ramos, J., Rigal, F., Rochat, S., Roelfsema, R., Rousset, G., Roux, A., Salasnich, B., Sauvage, J.-F., Sevin, A., Soenke, C., Stadler, E., Suarez, M., Turatto, M., Weber, L. Discovery of a planetary-mass companion within the gap of the transition disk around PDS 70. *Astronomy and Astrophysics*, 617:A44, 9/2018.

Mattila, S.; Pérez-Torres, M.; Efstathiou, A.; Mimica, P.; Fraser, M.; Kankare, E.; Alberdi, A.; Aloy, M. Á.; Heikkilä, T.; Jonker, P. G.; Lundqvist, P.; Martí-Vidal, I.; Meikle, W. P. S.; Romero-Cañizales, C.; Smartt, S. J.; Tsygankov, S.; Varenius, E.; Alonso-Herrero, A.; Bondi, M.; Fransson, C.; Herrero-Illana, R.; Kangas, T.; Kotak, R.; Ramírez-Olivencia, N.; Väisänen, P.; Beswick, R. J.; Clements, D. L.; Greimel, R.; Harmanen, J.; Kotilainen, J.; Nandra, K.; Reynolds, T.; Ryder, S.; Walton, N. A.; Wiik, K.; Östlin, G. A dust-enshrouded tidal disruption event with a resolved radio jet in a galaxy merger. *Science*, 361:482-485, 8/2018.

Hsieh, H. H., Kim, Y., Fitzsimmons, A., Sykes, M. V. Search for Dust Emission from (24) Themis Using the Gemini-North Observatory. *Publications of the Astronomical Society of the Pacific*, 130:084402, 8/2018.

Li, K.-L., Hou, X., Strader, J., Takata, J., Kong, A. K. H., Chomiuk, L., Swihart, S. J., Hui, C. Y., Cheng, K. S. Multiwavelength Observations of a New Redback Millisecond Pulsar Candidate: 3FGL J0954.8–3948. *The Astrophysical Journal*, 863:194, 8/2018.

Cibirka, N., Acebron, A., Zitrin, A., Coe, D., Agulli, I., Andrade-Santos, F., Bradač, M., Frye, B., Livermore, R. C., Mahler, G., Salmon, B., Sharon, K., Trenti, M., Umetsu, K., Avila, R., Bradley, L., Carrasco, D., Cerny, C., Czakon, N. G., Dawson, W. A., Hoag, A. T., Huang, K.-H., Johnson, T. L., Jones, C., Kikuchihara, S., Lam, D., Lovisari, L., Mainali, R., Oesch, P. A., Ogaz, S., Ouchi, M., Past, M., Paterno-Mahler, R., Peterson, A., Ryan, R. E., Sendra-Server, I., Stark, D. P., Strait, V., Toft, S., Vulcani, B. RELICS: Strong Lensing Analysis of the Galaxy Clusters Abell S295, Abell 697, MACS J0025.4-1222, and MACS J0159.8-0849. *The Astrophysical Journal*, 863:145, 8/2018.

Binder, B., Levesque, E. M., Dorn-Wallenstein, T. No Strong Geometric Beaming in the Ultraluminous Neutron Star Binary NGC 300 ULX-1 (SN 2010da) from Swift and Gemini. *The Astrophysical Journal*, 863:141, 8/2018.

Kim, H.-J., Koo, B.-C., Pyo, T.-S., Davis, C. J. A Parsec-scale Bipolar H_2Outflow in the Massive Star-forming Infrared Dark Cloud Core MSXDC G053.11+00.05 MM1. *The Astrophysical Journal*, 863:74, 8/2018.

Sand, D. J., Graham, M. L., Botyánszki, J., Hiramatsu, D., McCully, C., Valenti, S., Hosseinzadeh, G., Howell, D. A., Burke, J., Cartier, R., Diamond, T., Hsiao, E. Y., Jha, S. W., Kasen, D., Kumar, S., Marion, G. H., Suntzeff, N., Tartaglia, L., Wheeler, J. C., Wyatt, S. Nebular Spectroscopy of the “Blue Bump” Type Ia Supernova 2017cbv. *The Astrophysical Journal*, 863:24, 8/2018.

Jencson, J. E., Kasliwal, M. M., Adams, S. M., Bond, H. E., Lau, R. M., Johansson, J., Horesh, A., Mooley, K. P., Fender, R., De, K., O'Sullivan, D., Masci, F. J., Cody, A. M., Blagorodnova, N., Fox, O. D., Gehrz, R. D., Milne, P. A., Perley, D. A., Smith, N., Van Dyk, S. D. SPIRITS 16tn in NGC 3556: A Heavily Obscured and Low-luminosity Supernova at 8.8 Mpc. *The Astrophysical Journal*, 863:20, 8/2018.

Najita, J. R., Carr, J. S., Salyk, C., Lacy, J. H., Richter, M. J., DeWitt, C. Spectrally Resolved Mid-infrared Molecular Emission from Protoplanetary Disks and the Chemical Fingerprint of Planetesimal Formation. *The Astrophysical Journal*, 862:122, 8/2018.

Tang, S.-Y., Chen, W. P., Chiang, P. S., Jose, J., Herczeg, G. J., Goldman, B. Characterization of Stellar and Substellar Members in the Coma Berenices Star Cluster. *The Astrophysical Journal*, 862:106, 8/2018.

Dong, R., Najita, J. R., Brittain, S. Spiral Arms in Disks: Planets or Gravitational Instability?. *The Astrophysical Journal*, 862:103, 8/2018.

Shimonishi, T., Watanabe, Y., Nishimura, Y., Aikawa, Y., Yamamoto, S., Onaka, T., Sakai, N., Kawamura, A. A Multiline Study of a High-mass Young Stellar Object in the Small Magellanic Cloud with ALMA: The Detection of Methanol Gas at 0.2 Solar Metallicity. *The Astrophysical Journal*, 862:102, 8/2018.

Luhman, K. L., Herrmann, K. A., Mamajek, E. E., Esplin, T. L., Pecaut, M. J. New Young Stars and Brown Dwarfs in the Upper Scorpius Association. *The Astronomical Journal*, 156:76, 8/2018.

Fletcher, L. N., Melin, H., Adriani, A., Simon, A. A., Sanchez-Lavega, A., Donnelly, P. T., Antuñano, A., Orton, G. S., Hueso, R., Kraaikamp, E., Wong, M. H., Barnett, M., Moriconi, M. L., Altieri, F., Sindoni, G. Jupiter's Mesoscale Waves Observed at 5 µm by Ground-based Observations and Juno JIRAM. *The Astronomical Journal*, 156:67, 8/2018.

Esposito, T. M., Duchêne, G., Kalas, P., Rice, M., Choquet, É., Ren, B., Perrin, M. D., Chen, C. H., Arriaga, P., Chiang, E., Nielsen, E. L., Graham, J. R., Wang, J. J., De Rosa, R. J., Follette, K. B., Ammons, S. M., Ansdell, M., Bailey, V. P., Barman, T., Sebastián Bruzzone, J., Bulger, J., Chilcote, J., Cotten, T., Doyon, R., Fitzgerald, M. P., Goodsell, S. J., Greenbaum, A. Z., Hibon, P., Hung, L.-W., Ingraham, P., Konopacky, Q., Larkin, J. E., Macintosh, B., Maire, J., Marchis, F., Marois, C., Mazoyer, J., Metchev, S., Millar-Blanchaer, M. A., Oppenheimer, R., Palmer, D., Patience, J., Poyneer, L., Pueyo, L., Rajan, A., Rameau, J., Rantakyrö, F. T., Ryan, D., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., Wolff, S. Direct Imaging of the HD 35841 Debris Disk: A Polarized Dust Ring from Gemini Planet Imager and an Outer Halo from HST/STIS. *The Astronomical Journal*, 156:47, 8/2018.

Vanderburg, A., Mann, A. W., Rizzuto, A., Bieryla, A., Kraus, A. L., Berlind, P., Calkins, M. L., Curtis, J. L., Douglas, S. T., Esquerdo, G. A., Everett, M. E., Horch, E. P., Howell, S. B., Latham, D. W., Mayo, A. W., Quinn, S. N., Scott, N. J., Stefanik, R. P. Zodiacal Exoplanets in Time (ZEIT). VII. A Temperate Candidate Super-Earth in the Hyades Cluster. *The Astronomical Journal*, 156:46, 8/2018.

Selsing, J., Krühler, T., Malesani, D., D'Avanzo, P., Schulze, S., Vergani, S. D., Palmerio, J., Japelj, J., Milvang-Jensen, B., Watson, D., Jakobsson, P., Bolmer, J., Cano, Z., Covino, S., D'Elia, V., de Ugarte Postigo, A., Fynbo, J. P. U., Gomboc, A., Heintz, K. E., Kaper, L., Levan, A. J., Piranomonte, S., Pugliese, G., Sánchez-Ramírez, R., Sparre, M., Tanvir, N. R., Thöne, C. C., Wiersema, K. The host galaxy of the short GRB 111117A at z = 2.211. Impact on the short GRB redshift distribution and progenitor channels. *Astronomy and Astrophysics*, 616:A48, 8/2018.

Pelisoli, I., Kepler, S. O., Koester, D., Castanheira, B. G., Romero, A. D., Fraga, L. The sdA problem - II. Photometric and spectroscopic follow-up. *Monthly Notices of the Royal Astronomical Society*, 478:867-884, 7/2018.

Soja, A. C., Sodré, L., Monteiro-Oliveira, R., Cypriano, E. S., Lima Neto, G. B. A Gemini view of the galaxy cluster RXC J1504-0248: insights on the nature of the central gaseous filaments. *Monthly Notices of the Royal Astronomical Society*, 477:3279-3292, 7/2018.

Krajnović, D., Cappellari, M., McDermid, R. M., Thater, S., Nyland, K., de Zeeuw, P. T., Falcón-Barroso, J., Khochfar, S., Kuntschner, H., Sarzi, M., Young, L. M. A quartet of black holes and a missing duo: probing the low end of the M_{BH}-σ relation with the adaptive optics assisted integral-field spectroscopy. *Monthly Notices of the Royal Astronomical Society*, 477:3030-3064, 7/2018.

Pajuelo, M., Carry, B., Vachier, F., Marsset, M., Berthier, J., Descamps, P., Merline, W. J., Tamblyn, P. M., Grice, J., Conrad, A., Storrs, A., Timerson, B., Dunham, D., Preston, S., Vigan, A., Yang, B., Vernazza, P., Fauvaud, S., Bernasconi, L., Romeuf, D., Behrend, R., Dumas, C., Drummond, J. D., Margot, J.-L., Kervella, P., Marchis, F., Girard, J. H. Physical, spectral, and dynamical properties of asteroid (107) Camilla and its satellites. *Icarus*, 309:134-161, 7/2018.

Draghis, P., Romani, R. W. PSR J0636+5128: A Heated Companion in a Tight Orbit. *The Astrophysical Journal*, 862:L6, 7/2018.

Lee, K.-S., Dey, A., Matheson, T., Shi, K., Hung, C.-L., Xue, R., Inami, H., Huang, Y., Lee, K.-G., Ashby, M. L. N., Jannuzi, B., Reddy, N., Hong, S., Mo, W., Malavasi, N. Discovery of a Very Large (≈20 kpc) Galaxy at z = 3.72. *The Astrophysical Journal*, 862:24, 7/2018.

Rogerson, J. A., Hall, P. B., Ahmed, N. S., Rodríguez Hidalgo, P., Brandt, W. N., Filiz Ak, N. Emergence and Variability of Broad Absorption Line Quasar Outflows. *The Astrophysical Journal*, 862:22, 7/2018.

Diamond, T. R., Hoeflich, P., Hsiao, E. Y., Sand, D. J., Sonneborn, G., Phillips, M. M., Hristov, B., Collins, D. C., Ashall, C., Marion, G. H., Stritzinger, M., Morrell, N., Gerardy, C. L., Penney, R. B. Near-infrared Spectral Evolution of the Type Ia Supernova 2014J in the Nebular Phase: Implications for the Progenitor System. *The Astrophysical Journal*, 861:119, 7/2018.

Harrison, T. E. The Identification of Hydrogen-deficient Cataclysmic Variable Donor Stars. *The Astrophysical Journal*, 861:102, 7/2018.

da Silva, P., Steiner, J. E., Menezes, R. B. NGC 6744: A Nearby Milky Way Twin with a Very Low-luminosity AGN. *The Astrophysical Journal*, 861:83, 7/2018.

Hsieh, H. H., Ishiguro, M., Knight, M. M., Micheli, M., Moskovitz, N. A., Sheppard, S. S., Trujillo, C. A. The Reactivation and Nucleus Characterization of Main-belt Comet 358P/PANSTARRS (P/2012 T1). *The Astronomical Journal*, 156:39, 7/2018.

Matson, R. A., Howell, S. B., Horch, E. P., Everett, M. E. Stellar Companions of Exoplanet Host Stars in K2. *The Astronomical Journal*, 156:31, 7/2018.

Reipurth, B., Herbig, G. H., Bally, J., Geballe, T. R., Bowler, B. P., Raga, A. C., Chiang, H.-F., Connelley, M. S., Aspin, C. The Multiple Pre-main-sequence System PR Ori and the Associated HH 305 Flow. *The Astronomical Journal*, 156:25, 7/2018.

Maas, Z. G., Pilachowski, C. A. Chlorine Isotope Ratios in M Giants. *The Astronomical Journal*, 156:2, 7/2018.

Weidmann, W., Gamen, R., Mast, D., Fariña, C., Gimeno, G., Schmidt, E. O., Ashley, R. P., Peralta de Arriba, L., Sowicka, P., Ordonez-Etxeberria, I. Towards an improvement in the spectral description of central stars of planetary nebulae. *Astronomy and Astrophysics*, 614:A135, 7/2018.

Boone, K., Aldering, G., Copin, Y., Dixon, S., Domagalski, R. S., Gangler, E., Pecontal, E., Perlmutter, S. A Binary Offset Effect in CCD Readout and Its Impact on Astronomical Data. *Publications of the Astronomical Society of the Pacific*, 130:064504, 6/2018.

Micheli, M., Farnocchia, D., Meech, K. J., Buie, M. W., Hainaut, O. R., Prialnik, D., Schörghofer, N., Weaver, H. A., Chodas, P. W., Kleyna, J. T., Weryk, R., Wainscoat, R. J., Ebeling, H., Keane, J. V., Chambers, K. C., Koschny, D., Petropoulos, A. E. Non-gravitational acceleration in the trajectory of 1I/2017 U1 ('Oumuamua). *Nature*, 559:223-226, 6/2018.

Lin, D., Strader, J., Carrasco, E. R., Page, D., Romanowsky, A. J., Homan, J., Irwin, J. A., Remillard, R. A., Godet, O., Webb, N. A., Baumgardt, H., Wijnands, R., Barret, D., Duc, P.-A., Brodie, J. P., Gwyn, S. D. J. A luminous X-ray outburst from an intermediate-mass black hole in an off-centre star cluster. *Nature Astronomy*, 2:656-661, 6/2018.

Hennig, M. G., Riffel, R. A., Dors, O. L., Riffel, R., Storchi-Bergmann, T., Colina, L. Circumnuclear star formation in Mrk 42 mapped with Gemini Near-infrared Integral Field Spectrograph. *Monthly Notices of the Royal Astronomical Society*, 477:1086-1098, 6/2018.

Loubser, S. I., Hoekstra, H., Babul, A., O'Sullivan, E. Diversity in the stellar velocity dispersion profiles of a large sample of brightest cluster galaxies z ≤ 0.3. *Monthly Notices of the Royal Astronomical Society*, 477:335-358, 6/2018.

de Jaeger, T., Anderson, J. P., Galbany, L., González-Gaitán, S., Hamuy, M., Phillips, M. M., Stritzinger, M. D., Contreras, C., Folatelli, G., Gutiérrez, C. P., Hsiao, E. Y., Morrell, N., Suntzeff, N. B., Dessart, L., Filippenko, A. V. Observed Type II supernova colours from the Carnegie Supernova Project-I. *Monthly Notices of the Royal Astronomical Society*, 476:4592-4616, 6/2018.

Hunt, Q., Bezanson, R., Greene, J. E., Spilker, J. S., Suess, K. A., Kriek, M., Narayanan, D., Feldmann, R., van der Wel, A., Pattarakijwanich, P. Stellar and Molecular Gas Rotation in a Recently Quenched Massive Galaxy at z ˜ 0.7. *The Astrophysical Journal*, 860:L18, 6/2018.

Saracino, S., Dalessandro, E., Ferraro, F. R., Lanzoni, B., Origlia, L., Salaris, M., Pietrinferni, A., Geisler, D., Kalirai, J. S., Correnti, M., Cohen, R. E., Mauro, F., Villanova, S., Moni Bidin, C. On the Use of the Main-sequence Knee (Saddle) to Measure Globular Cluster Ages. *The Astrophysical Journal*, 860:95, 6/2018.

Lusso, E., Fumagalli, M., Rafelski, M., Neeleman, M., Prochaska, J. X., Hennawi, J. F., O'Meara, J. M., Theuns, T. The Spectral and Environment Properties of z ˜ 2.0-2.5 Quasar Pairs. *The Astrophysical Journal*, 860:41, 6/2018.

Esparza-Arredondo, D., González-Martín, O., Dultzin, D., Alonso-Herrero, A., Ramos Almeida, C., Díaz-Santos, T., García-Bernete, I., Martinez-Paredes, M., Rodríguez-Espinosa, J. M. Circumnuclear Star Formation and AGN Activity: Clues from Surface Brightness Radial Profile of PAHs and [{\rm{S}}\,{\rm{IV}}]. *The Astrophysical Journal*, 859:124, 6/2018.

Ko, Y., Lee, M. G., Park, H. S., Sohn, J., Lim, S., Hwang, N. Gemini/GMOS Spectroscopy of Globular Clusters in the Merger Remnant Galaxy M85. *The Astrophysical Journal*, 859:108, 6/2018.

Scolnic, D. M., Jones, D. O., Rest, A., Pan, Y. C., Chornock, R., Foley, R. J., Huber, M. E., Kessler, R., Narayan, G., Riess, A. G., Rodney, S., Berger, E., Brout, D. J., Challis, P. J., Drout, M., Finkbeiner, D., Lunnan, R., Kirshner, R. P., Sanders, N. E., Schlafly, E., Smartt, S., Stubbs, C. W., Tonry, J., Wood-Vasey, W. M., Foley, M., Hand, J., Johnson, E., Burgett, W. S., Chambers, K. C., Draper, P. W., Hodapp, K. W., Kaiser, N., Kudritzki, R. P., Magnier, E. A., Metcalfe, N., Bresolin, F., Gall, E., Kotak, R., McCrum, M., Smith, K. W. The Complete Light-curve Sample of Spectroscopically Confirmed SNe Ia from Pan-STARRS1 and Cosmological Constraints from the Combined Pantheon Sample. *The Astrophysical Journal*, 859:101, 6/2018.

Marino, A. F., Yong, D., Milone, A. P., Piotto, G., Lundquist, M., Bedin, L. R., Chené, A.-N., Da Costa, G., Asplund, M., Jerjen, H. Metallicity Variations in the Type II Globular Cluster NGC 6934. *The Astrophysical Journal*, 859:81, 6/2018.

Placco, V. M., Beers, T. C., Santucci, R. M., Chanamé, J., Sepúlveda, M. P., Coronado, J., Points, S. D., Kaleida, C. C., Rossi, S., Kordopatis, G., Lee, Y. S., Matijevič, G., Frebel, A., Hansen, T. T., Holmbeck, E. M., Rasmussen, K. C., Roederer, I. U., Sakari, C. M., Whitten, D. D. Spectroscopic Validation of Low-metallicity Stars from RAVE. *The Astronomical Journal*, 155:256, 6/2018.

Greenbaum, A. Z., Pueyo, L., Ruffio, J.-B., Wang, J. J., De Rosa, R. J., Aguilar, J., Rameau, J., Barman, T., Marois, C., Marley, M. S., Konopacky, Q., Rajan, A., Macintosh, B., Ansdell, M., Arriaga, P., Bailey, V. P., Bulger, J., Burrows, A. S., Chilcote, J., Cotten, T., Doyon, R., Duchêne, G., Fitzgerald, M. P., Follette, K. B.,

Gerard, B., Goodsell, S. J., Graham, J. R., Hibon, P., Hung, L.-W., Ingraham, P., Kalas, P., Larkin, J. E., Maire, J., Marchis, F., Metchev, S., Millar-Blanchaer, M. A., Nielsen, E. L., Norton, A., Oppenheimer, R., Palmer, D., Patience, J., Perrin, M. D., Poyneer, L., Rantakyrö, F. T., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., Wolff, S. GPI Spectra of HR 8799 c, d, and e from 1.5 to 2.4 µm with KLIP Forward Modeling. *The Astronomical Journal*, 155:226, 6/2018.

Humire, P. K., Nagar, N. M., Finlez, C., Firpo, V., Slater, R., Lena, D., Soto-Pinto, P., Muñoz-Vergara, D., Riffel, R. A., Schmitt, H. R., Kraemer, S. B., Schnorr-Müller, A., Fischer, T. C., Robinson, A., Storchi-Bergmann, T., Crenshaw, M., Elvis, M. S. An outflow in the Seyfert ESO 362-G18 revealed by Gemini-GMOS/IFU observations. *Astronomy and Astrophysics*, 614:A94, 6/2018.

Caffau, E., Gallagher, A. J., Bonifacio, P., Spite, M., Duffau, S., Spite, F., Monaco, L., Sbordone, L. Investigation of a sample of carbon-enhanced metal-poor stars observed with FORS and GMOS. *Astronomy and Astrophysics*, 614:A68, 6/2018.

Irwin, P. G. J., Toledo, D., Garland, R., Teanby, N. A., Fletcher, L. N., Orton, G. A., Bézard, B. Detection of hydrogen sulfide above the clouds in Uranus's atmosphere. *Nature Astronomy*, 2:420-427, 5/2018.

Drahus, M., Guzik, P., Waniak, W., Handzlik, B., Kurowski, S., Xu, S. Tumbling motion of 1I/`Oumuamua and its implications for the body's distant past. *Nature Astronomy*, 2:407-412, 5/2018.

Kumari, N., James, B. L., Irwin, M. J., Amorín, R., Pérez-Montero, E. O/H-N/O: the curious case of NGC 4670. *Monthly Notices of the Royal Astronomical Society*, 476:3793-3815, 5/2018.

Freitas, I. C., Riffel, R. A., Storchi-Bergmann, T., Elvis, M., Robinson, A., Crenshaw, D. M., Nagar, N. M., Lena, D., Schmitt, H. R., Kraemer, S. B. Outflows in the narrow-line region of bright Seyfert galaxies - I. GMOS-IFU data. *Monthly Notices of the Royal Astronomical Society*, 476:2760-2778, 5/2018.

Maund, J. R. The very young resolved stellar populations around stripped-envelope supernovae. *Monthly Notices of the Royal Astronomical Society*, 476:2629-2663, 5/2018.

Hayward, C. C., Chapman, S. C., Steidel, C. C., Golob, A., Casey, C. M., Smith, D. J. B., Zitrin, A., Blain, A. W., Bremer, M. N., Chen, C.-C., Coppin, K. E. K., Farrah, D., Ibar, E., Michałowski, M. J., Sawicki, M., Scott, D., van der Werf, P., Fazio, G. G., Geach, J. E., Gurwell, M., Petitpas, G., Wilner, D. J. Observational constraints on the physical nature of submillimetre source multiplicity: chance projections are common. *Monthly Notices of the Royal Astronomical Society*, 476:2278-2287, 5/2018.

Gilbank, D. G., Barrientos, L. F., Ellingson, E., Blindert, K., Yee, H. K. C., Anguita, T., Gladders, M. D., Hall, P. B., Hertling, G., Infante, L., Yan, R., Carrasco, M., Garcia-Vergara, C., Dawson, K. S., Lidman, C., Morokuma, T. Spectroscopic characterization of galaxy clusters in RCS-1: spectroscopic confirmation, redshift accuracy, and dynamical mass-richness relation. *Monthly Notices of the Royal Astronomical Society*, 476:1991-2012, 5/2018.

Sivo, G., Turchi, A., Masciadri, E., Guesalaga, A., Neichel, B. Towards an automatic wind speed and direction profiler for Wide Field adaptive optics systems. *Monthly Notices of the Royal Astronomical Society*, 476:999-1009, 5/2018.

Drummond, J. D., Merline, W. J., Carry, B., Conrad, A., Reddy, V., Tamblyn, P., Chapman, C. R., Enke, B. L., Pater, I. d., Kleer, K. d., Christou, J., Dumas, C. The triaxial ellipsoid size, density, and rotational pole of asteroid (16) Psyche from Keck and Gemini AO observations 2004-2015. *Icarus*, 305:174-185, 5/2018.

Carlin, J. L., Sheffield, A. A., Cunha, K., Smith, V. V. Chemical Abundances of Hydrostatic and Explosive Alpha-elements in Sagittarius Stream Stars. *The Astrophysical Journal*, 859:L10, 5/2018.

Nguyen, D. D., Seth, A. C., Neumayer, N., Kamann, S., Voggel, K. T., Cappellari, M., Picotti, A., Nguyen, P. M., Böker, T., Debattista, V., Caldwell, N., McDermid, R., Bastian, N., Ahn, C. C., Pechetti, R. Nearby Early-type Galactic Nuclei at High Resolution: Dynamical Black Hole and Nuclear Star Cluster Mass Measurements. *The Astrophysical Journal*, 858:118, 5/2018.

Ahn, C. P., Seth, A. C., Cappellari, M., Krajnović, D., Strader, J., Voggel, K. T., Walsh, J. L., Bahramian, A., Baumgardt, H., Brodie, J., Chilingarian, I., Chomiuk, L., den Brok, M., Frank, M., Hilker, M., McDermid, R. M., Mieske, S., Neumayer, N., Nguyen, D. D., Pechetti, R., Romanowsky, A. J., Spitler, L. The Black Hole in the Most Massive Ultracompact Dwarf Galaxy M59-UCD3. *The Astrophysical Journal*, 858:102, 5/2018.

Morley, C. V., Skemer, A. J., Allers, K. N., Marley, M. S., Faherty, J. K., Visscher, C., Beiler, S. A., Miles, B. E., Lupu, R., Freedman, R. S., Fortney, J. J., Geballe, T. R., Bjoraker, G. L. An L Band Spectrum of the Coldest Brown Dwarf. *The Astrophysical Journal*, 858:97, 5/2018.

Laskar, T., Berger, E., Chornock, R., Margutti, R., Fong, W.-f., Zauderer, B. A. A VLA Study of High-redshift GRBs. I. Multiwavelength Observations and Modeling of GRB 140311A. *The Astrophysical Journal*, 858:65, 5/2018.

Harker, D. E., Woodward, C. E., Kelley, M. S. P., Wooden, D. H. Hyperactivity and Dust Composition of Comet 103P/Hartley 2 During the EPOXI Encounter. *The Astronomical Journal*, 155:199, 5/2018.

Kuncarayakti, H.; Anderson, J. P.; Galbany, L.; Maeda, K.; Hamuy, M.; Aldering, G.; Arimoto, N.; Doi, M.; Morokuma, T.; Usuda, T. Constraints on core-collapse supernova progenitors from explosion site integral field spectroscopy. *Astronomy and Astrophysics*, 613:A35, 5/2018.

Torres, A. F., Cidale, L. S., Kraus, M., Arias, M. L., Barbá, R. H., Maravelias, G., Borges Fernandes, M. Resolving the clumpy circumstellar environment of the B[e] supergiant LHA 120-S 35. *Astronomy and Astrophysics*, 612:A113, 5/2018.

Miller, T. B.; Chapman, S. C.; Aravena, M.; Ashby, M. L. N.; Hayward, C. C.; Vieira, J. D.; Weiß, A.; Babul, A.; Béthermin, M.; Bradford, C. M.; Brodwin, M.; Carlstrom, J. E.; Chen, Chian-Chou; Cunningham, D. J. M.; De Breuck, C.; Gonzalez, A. H.; Greve, T. R.; Harnett, J.; Hezaveh, Y.; Lacaille, K.; Litke, K. C.; Ma, J.; Malkan, M.; Marrone, D. P.; Morningstar, W.; Murphy, E. J.; Narayanan, D.; Pass, E.; Perry, R.; Phadke, K. A.; Rennehan, D.; Rotermund, K. M.; Simpson, J.; Spilker, J. S.; Sreevani, J.; Stark, A. A.; Strandet, M. L.; Strom, A. L. A massive core for a cluster of galaxies at a redshift of 4.3. *Nature*, 556:469-472, 4/2018.

Hobson, M. J., Jofré, E., García, L., Petrucci, R., Gómez, M. Testing the Planet-Metallicity Correlation in M-dwarfs with Gemini GNIRS Spectra. *Revista Mexicana de Astronomia y Astrofisica*, 54:65-84, 4/2018.

Kelly, P. L., Diego, J. M., Rodney, S., Kaiser, N., Broadhurst, T., Zitrin, A., Treu, T., Pérez-González, P. G., Morishita, T., Jauzac, M., Selsing, J., Oguri, M., Pueyo, L., Ross, T. W., Filippenko, A. V., Smith, N., Hjorth, J., Cenko, S. B., Wang, X., Howell, D. A., Richard, J., Frye, B. L., Jha, S. W., Foley, R. J., Norman, C., Bradac, M., Zheng, W., Brammer, G., Benito, A. M., Cava, A., Christensen, L., de Mink, S. E., Graur, O., Grillo, C., Kawamata, R., Kneib, J.-P., Matheson, T., McCully, C., Nonino, M., Pérez-Fournon, I., Riess, A. G., Rosati, P., Schmidt, K. B., Sharon, K., Weiner, B. J. Extreme magnification of an individual star at redshift 1.5 by a galaxy-cluster lens. *Nature Astronomy*, 2:334-342, 4/2018.

Lee, C.-H. A closer look at the quadruply lensed quasar PSOJ0147: spectroscopic redshifts and microlensing effect. *Monthly Notices of the Royal Astronomical Society*, 475:3086-3089, 4/2018.

Jørgensen, I., Chiboucas, K., Hibon, P., Nielsen, L. D., Takamiya, M. The Gemini/HST Galaxy Cluster Project: Redshift 0.2-1.0 Cluster Sample, X-Ray Data, and Optical Photometry Catalog. *The Astrophysical Journal Supplement Series*, 235:29, 4/2018.

Lau, M. W., Prochaska, J. X., Hennawi, J. F. Quasars Probing Quasars. IX. The Kinematics of the Circumgalactic Medium Surrounding z ˜ 2 Quasars. *The Astrophysical Journal*, 857:126, 4/2018.

Jacobson-Galán, W. V., Dimitriadis, G., Foley, R. J., Kilpatrick, C. D. Constraining Type Ia Supernova Progenitor Scenarios with Extremely Late-time Photometry of Supernova SN 2013aa. *The Astrophysical Journal*, 857:88, 4/2018.

Conn, B. C., Jerjen, H., Kim, D., Schirmer, M. On the Nature of Ultra-faint Dwarf Galaxy Candidates. II. The Case of Cetus II. *The Astrophysical Journal*, 857:70, 4/2018.

Belton, M. J. S., Hainaut, O. R., Meech, K. J., Mueller, B. E. A., Kleyna, J. T., Weaver, H. A., Buie, M. W., Drahus, M., Guzik, P., Wainscoat, R. J., Waniak, W., Handzlik, B., Kurowski, S., Xu, S., Sheppard, S. S., Micheli, M., Ebeling, H., Keane, J. V. The Excited Spin State of 1I/2017 U1 'Oumuamua. *The Astrophysical Journal*, 856:L21, 4/2018.

Davidge, T. J. Seeing Red in NGC 1978, NGC 55, and NGC 3109. *The Astrophysical Journal*, 856:129, 4/2018.

An, H., Romani, R. W. SED Constraints on the Highest-z Blazar Jet: QSO J0906+6930. *The Astrophysical Journal*, 856:105, 4/2018.

Salinas, R., Pajkos, M. A., Vivas, A. K., Strader, J., Contreras Ramos, R. Stellar Variability at the Main-sequence Turnoff of the Intermediate-age LMC Cluster NGC 1846. *The Astronomical Journal*, 155:183, 4/2018.

Adams, S. M., Blagorodnova, N., Kasliwal, M. M., Amanullah, R., Barlow, T., Bue, B., Bulla, M., Cao, Y., Cenko, S. B., Cook, D. O., Ferretti, R., Fox, O. D., Fremling, C., Gezari, S., Goobar, A., Ho, A. Y. Q., Hung, T., Karamehmetoglu, E., Kulkarni, S. R., Kupfer, T., Laher, R. R., Masci, F. J., Miller, A. A., Neill, J. D., Nugent, P. E., Sollerman, J., Taddia, F., Walters, R. iPTF Survey for Cool Transients. *Publications of the Astronomical Society of the Pacific*, 130:034202, 3/2018.

van Dokkum, P., Danieli, S., Cohen, Y., Merritt, A., Romanowsky, A. J., Abraham, R., Brodie, J., Conroy, C., Lokhorst, D., Mowla, L., O'Sullivan, E., Zhang, J. A galaxy lacking dark matter. *Nature*, 555:629-632, 3/2018.

Scott, T. C., Lagos, P., Ramya, S., Sengupta, C., Paudel, S., Sahu, D. K., Misra, K., Woo, J.-H., Sohn, B. W. Arp 202: a TDG formed in a parent's extended dark matter halo?. *Monthly Notices of the Royal Astronomical Society*, 475:1148-1159, 3/2018.

Corral-Santana, J. M., Torres, M. A. P., Shahbaz, T., Bartlett, E. S., Russell, D. M., Kong, A. K. H., Casares, J., Muñoz-Darias, T., Bauer, F. E., Homan, J., Jonker, P. G., Mata Sánchez, D., Wevers, T., Rodríguez-Gil, P., Lewis, F., Schreuder, L. The long-term optical evolution of the black hole candidate MAXI J1659-152. *Monthly Notices of the Royal Astronomical Society*, 475:1036-1045, 3/2018.

Kynoch, D., Landt, H., Ward, M. J., Done, C., Gardner, E., Boisson, C., Arrieta-Lobo, M., Zech, A., Steenbrugge, K., Pereira Santaella, M. The relativistic jet of the γ-ray emitting narrow-line Seyfert 1 galaxy 1H 0323+342. *Monthly Notices of the Royal Astronomical Society*, 475:404-423, 3/2018.

Hekatelyne, C., Riffel, R. A., Sales, D., Robinson, A., Gallimore, J., Storchi-Bergmann, T., Kharb, P., O'Dea, C., Baum, S. Gemini IFU, VLA, and HST observations of the OH megamaser galaxy IRAS F23199+0123: the hidden monster and its outflow. *Monthly Notices of the Royal Astronomical Society*, 474:5319-5329, 3/2018.

Escudero, C. G., Faifer, F. R., Smith Castelli, A. V., Forte, J. C., Sesto, L. A., González, N. M., Scalia, M. C. Tracing the assembly history of NGC 1395 through its Globular Cluster System. *Monthly Notices of the Royal Astronomical Society*, 474:4302-4321, 3/2018.

Oldham, L., Auger, M. Galaxy structure from multiple tracers - III. Radial variations in M87's IMF. *Monthly Notices of the Royal Astronomical Society*, 474:4169-4185, 3/2018.

Torres-Zafra, J., Cellone, S. A., Buzzoni, A., Andruchow, I., Portilla, J. G. Redshift determination of the BL Lac object 3C 66A by the detection of its host galaxy cluster at z = 0.340. *Monthly Notices of the Royal Astronomical Society*, 474:3162-3172, 3/2018.

Ryder, S. D., Van Dyk, S. D., Fox, O. D., Zapartas, E., de Mink, S. E., Smith, N., Brunsden, E., Azalee Bostroem, K., Filippenko, A. V., Shivvers, I., Zheng, W. Ultraviolet Detection of the Binary Companion to the Type IIb SN 2001ig. *The Astrophysical Journal*, 856:83, 3/2018.

Oteo, I., Ivison, R. J., Dunne, L., Manilla-Robles, A., Maddox, S., Lewis, A. J. R., de Zotti, G., Bremer, M., Clements, D. L., Cooray, A., Dannerbauer, H., Eales, S., Greenslade, J., Omont, A., Perez–Fournón, I., Riechers, D., Scott, D., van der Werf, P., Weiss, A., Zhang, Z.-Y. An Extreme Protocluster of Luminous Dusty Starbursts in the Early Universe. *The Astrophysical Journal*, 856:72, 3/2018.

Thorp, M. D., Levesque, E. M. A Spatially Resolved Study of the GRB 020903 Host Galaxy. *The Astrophysical Journal*, 856:36, 3/2018.

Goulding, A. D., Zakamska, N. L., Alexandroff, R. M., Assef, R. J., Banerji, M., Hamann, F., Wylezalek, D., Brandt, W. N., Greene, J. E., Lansbury, G. B., Pâris, I., Richards, G., Stern, D., Strauss, M. A. High-redshift Extremely Red Quasars in X-Rays. *The Astrophysical Journal*, 856:4, 3/2018.

Kim, Y., Im, M., Jeon, Y., Kim, M., Hyun, M., Kim, D., Kim, J.-W., Taak, Y. C., Yoon, Y., Choi, C., Hong, J., Jun, H. D., Karouzos, M., Kim, D., Kim, J. H., Lee, S.-K., Pak, S., Park, W.-K. The Infrared Medium-deep Survey. IV. The Low Eddington Ratio of A Faint Quasar at z ˜ 6: Not Every Supermassive Black Hole is Growing Fast in the Early Universe. *The Astrophysical Journal*, 855:138, 3/2018.

Riess, A. G., Casertano, S., Yuan, W., Macri, L., Anderson, J., MacKenty, J. W., Bowers, J. B., Clubb, K. I., Filippenko, A. V., Jones, D. O., Tucker, B. E. New Parallaxes of Galactic Cepheids from Spatially Scanning the Hubble Space Telescope: Implications for the Hubble Constant. *The Astrophysical Journal*, 855:136, 3/2018.

Mayo, A. W., Vanderburg, A., Latham, D. W., Bieryla, A., Morton, T. D., Buchhave, L. A., Dressing, C. D., Beichman, C., Berlind, P., Calkins, M. L., Ciardi, D. R., Crossfield, I. J. M., Esquerdo, G. A., Everett, M. E., Gonzales, E. J., Hirsch, L. A., Horch, E. P., Howard, A. W., Howell, S. B., Livingston, J., Patel, R., Petigura, E. A., Schlieder, J. E., Scott, N. J., Schumer, C. F., Sinukoff, E., Teske, J., Winters, J. G. 275 Candidates and 149 Validated Planets Orbiting Bright Stars in K2 Campaigns 0-10. *The Astronomical Journal*, 155:136, 3/2018.

McGreer, I. D., Fan, X., Jiang, L., Cai, Z. The Faint End of the z = 5 Quasar Luminosity Function from the CFHTLS. *The Astronomical Journal*, 155:131, 3/2018.

Gall, C., Stritzinger, M. D., Ashall, C., Baron, E., Burns, C. R., Hoeflich, P., Hsiao, E. Y., Mazzali, P. A., Phillips, M. M., Filippenko, A. V., Anderson, J. P., Benetti, S., Brown, P. J., Campillay, A., Challis, P., Contreras, C., Elias de la Rosa, N., Folatelli, G., Foley, R. J., Fraser, M., Holmbo, S., Marion, G. H., Morrell, N., Pan, Y.-C., Pignata, G., Suntzeff, N. B., Taddia, F., Robledo, S. T., Valenti, S. Two transitional type Ia supernovae located in the Fornax cluster member NGC 1404: SN 2007on and SN 2011iv. *Astronomy and Astrophysics*, 611:A58, 3/2018.

Riffel, R. A., Storchi-Bergmann, T., Riffel, R., Davies, R., Bianchin, M., Diniz, M. R., Schönell, A. J., Burtscher, L., Crenshaw, M., Fischer, T. C., Dahmer-Hahn, L. G., Dametto, N. Z., Rosario, D. Gemini NIFS survey of feeding and feedback processes in nearby active galaxies - II. The sample and surface mass density profiles. *Monthly Notices of the Royal Astronomical Society*, 474:1373-1389, 2/2018.

Kool, E. C., Ryder, S., Kankare, E., Mattila, S., Reynolds, T., McDermid, R. M., Pérez-Torres, M. A., Herrero-Illana, R., Schirmer, M., Efstathiou, A., Bauer, F. E., Kotilainen, J., Väisänen, P., Baldwin, C., Romero-Cañizales, C., Alberdi, A. First results from GeMS/GSAOI for project SUNBIRD: Supernovae UNmasked By Infra-Red Detection. *Monthly Notices of the Royal Astronomical Society*, 473:5641-5657, 2/2018.

Ricci, T. V., Steiner, J. E., May, D., Garcia-Rissmann, A., Menezes, R. B. Optical and near-infrared IFU spectroscopy of the nuclear region of the AGN-starburst galaxy NGC 7582. *Monthly Notices of the Royal Astronomical Society*, 473:5334-5351, 2/2018.

O'Dowd, M., Bate, N. F., Webster, R. L., Labrie, K., King, A. L., Yong, S.-. Y. The intrinsic far-UV spectrum of the high-redshift quasar B1422+231. *Monthly Notices of the Royal Astronomical Society*, 473:4722-4730, 2/2018.

Baldwin, C., McDermid, R. M., Kuntschner, H., Maraston, C., Conroy, C. Comparison of stellar population model predictions using optical and infrared spectroscopy. *Monthly Notices of the Royal Astronomical Society*, 473:4698-4721, 2/2018.

Li, Yunyang; Wang, Weiyang; Ge, Mingyu; Liu, Xiongwei; Tong, Hao; Xu, Renxin. Calvera: A Low-mass Strangeon Star Torqued by Debris Disk? *The Astrophysical Journal*, 854:165, 2/2018.

Lockhart, K. E.; Lu, J. R.; Peiris, H. V.; Rich, R. M.; Bouchez, A.; Ghez, A. M. A Slowly Precessing Disk in the Nucleus of M31 as the Feeding Mechanism for a Central Starburst. The Astrophysical Journal, 854:121, 2/2018.

Gagné, J., Allers, K. N., Theissen, C. A., Faherty, J. K., Bardalez Gagliuffi, D., Artigau, É. 2MASS J13243553+6358281 Is an Early T-type Planetary-mass Object in the AB Doradus Moving Group. *The Astrophysical Journal*, 854:L27, 2/2018.

Madrid, J. P., Lee-Waddell, K., Serra, P., Koribalski, B. S., Schirmer, M., Spekkens, K., Wang, J. Gemini Follow-up of Two Massive H I Clouds Discovered with the Australian Square Kilometer Array Pathfinder. *The Astrophysical Journal*, 854:L6, 2/2018.

Smith, M., Sullivan, M., Nichol, R. C., Galbany, L., D'Andrea, C. B., Inserra, C., Lidman, C., Rest, A., Schirmer, M., Filippenko, A. V., Zheng, W., Cenko, S. B., Angus, C. R., Brown, P. J., Davis, T. M., Finley, D. A., Foley, R. J., González-Gaitán, S., Gutiérrez, C. P., Kessler, R., Kuhlmann, S., Marriner, J., Möller, A., Nugent, P. E., Prajs, S., Thomas, R., Wolf, R., Zenteno, A., Abbott, T. M. C., Abdalla, F. B., Allam, S., Annis, J., Bechtol, K., Benoit-Lévy, A., Bertin, E., Brooks, D., Burke, D. L., Carnero Rosell, A., Carrasco Kind, M., Carretero, J., Castander, F. J., Crocce, M., Cunha, C. E., da Costa, L. N., Davis, C., Desai, S., Diehl, H. T., Doel, P., Eifler, T. F., Flaugher, B., Fosalba, P., Frieman, J., García-Bellido, J., Gaztanaga, E., Gerdes, D. W., Goldstein, D. A., Gruen, D., Gruendl, R. A., Gschwend, J., Gutierrez, G., Honscheid, K., James, D. J., Johnson, M. W. G., Kuehn, K., Kuropatkin, N., Li, T. S., Lima, M., Maia, M. A. G., Marshall, J. L., Martini, P., Menanteau, F., Miller, C. J., Miquel, R., Ogando, R. L. C., Petravick, D., Plazas, A. A., Romer, A. K., Rykoff, E. S., Sako, M., Sanchez, E., Scarpine, V., Schindler, R., Schubnell, M., Sevilla-Noarbe, I., Smith, R. C., Soares-Santos, M., Sobreira, F., Suchyta, E., Swanson, M. E. C., Tarle, G., Walker, A. R., DES Collaboration Studying the Ultraviolet Spectrum of the First Spectroscopically Confirmed Supernova at Redshift Two. *The Astrophysical Journal*, 854:37, 2/2018.

Crepp, J. R., Principe, D. A., Wolff, S., Giorla Godfrey, P. A., Rice, E. L., Cieza, L., Pueyo, L., Bechter, E. B., Gonzales, E. J. GPI Spectroscopy of the Mass, Age, and Metallicity Benchmark Brown Dwarf HD 4747 B. *The Astrophysical Journal*, 853:192, 2/2018.

Balick, B., Frank, A., Liu, B., Corradi, R. Models of the Mass-ejection Histories of Pre-planetary Nebulae. II. The Formation of Minkowski's Butterfly and its Proboscis in M2-9. *The Astrophysical Journal*, 853:168, 2/2018.

Lee, C.-H. SDSSJ1156-0207: A 0.54+0.19 $M_{\odot}$ Double-lined M-Dwarf Eclipsing Binary System. *The Astronomical Journal*, 155:86, 2/2018.

Christiansen, J. L., Crossfield, I. J. M., Barentsen, G., Lintott, C. J., Barclay, T., Simmons, B. D., Petigura, E., Schlieder, J. E., Dressing, C. D., Vanderburg, A., Allen, C., McMaster, A., Miller, G., Veldthuis, M., Allen, S., Wolfenbarger, Z., Cox, B., Zemiro, J., Howard, A. W., Livingston, J., Sinukoff, E., Catron, T., Grey, A., Kusch, J. J. E., Terentev, I., Vales, M., Kristiansen, M. H. The K2-138 System: A Near-resonant Chain of Five Sub-Neptune Planets Discovered by Citizen Scientists. *The Astronomical Journal*, 155:57, 2/2018.

Bañados, E., Venemans, B. P., Mazzucchelli, C., Farina, E. P., Walter, F., Wang, F., Decarli, R., Stern, D., Fan, X., Davies, F. B., Hennawi, J. F., Simcoe, R. A., Turner, M. L., Rix, H.-W., Yang, J., Kelson, D. D., Rudie, G. C., Winters, J. M. An 800-million-solar-mass black hole in a significantly neutral Universe at a redshift of 7.5. *Nature*, 553:473-476, 1/2018.

Marrone, D. P., Spilker, J. S., Hayward, C. C., Vieira, J. D., Aravena, M., Ashby, M. L. N., Bayliss, M. B., Béthermin, M., Brodwin, M., Bothwell, M. S., Carlstrom, J. E., Chapman, S. C., Chen, C.-C., Crawford, T. M., Cunningham, D. J. M., De Breuck, C., Fassnacht, C. D., Gonzalez, A. H., Greve, T. R., Hezaveh, Y. D., Lacaille, K., Litke, K. C., Lower, S., Ma, J., Malkan, M., Miller, T. B., Morningstar, W. R., Murphy, E. J., Narayanan, D., Phadke, K. A., Rotermund, K. M., Sreevani, J., Stalder, B., Stark, A. A., Strandet, M. L., Tang, M., Weiß, A. Galaxy growth in a massive halo in the first billion years of cosmic history. *Nature*, 553:51-54, 1/2018.

Bernard, A., Neichel, B., Mugnier, L. M., Fusco, T. Optimal correction of distortion for high-angular-resolution images: Application to GeMS data. *Monthly Notices of the Royal Astronomical Society*, 473:2590-2607, 1/2018.

Menezes, R. B., da Silva, P., Steiner, J. E. The molecular H_2 and stellar discs in the nuclear region of NGC 4258. *Monthly Notices of the Royal Astronomical Society*, 473:2198-2211, 1/2018.

Lodieu, N., Zapatero Osorio, M. R., Béjar, V. J. S., Peña Ramírez, K. The optical + infrared L dwarf spectral sequence of young planetary-mass objects in the Upper Scorpius association. *Monthly Notices of the Royal Astronomical Society*, 473:2020-2059, 1/2018.

Principe, D. A., Cieza, L., Hales, A., Zurlo, A., Williams, J., Ruíz-Rodríguez, D., Canovas, H., Casassus, S., Mužić, K., Perez, S., Tobin, J. J., Zhu, Z. The ALMA early science view of FUor/EXor objects - IV. Misaligned

outflows in the complex star-forming environment of V1647 Ori and McNeil's Nebula. *Monthly Notices of the Royal Astronomical Society*, 473:879-895, 1/2018.

Pledger, J. L., Shara, M. M., Wilde, M., Crowther, P. A., Long, K. S., Zurek, D., Moffat, A. F. J. The first optical spectra of Wolf-Rayet stars in M101 revealed with Gemini/GMOS. *Monthly Notices of the Royal Astronomical Society*, 473:148-164, 1/2018.

Tartaglia, L., Sand, D. J., Valenti, S., Wyatt, S., Anderson, J. P., Arcavi, I., Ashall, C., Botticella, M. T., Cartier, R., Chen, T.-W., Cikota, A., Coulter, D., Della Valle, M., Foley, R. J., Gal-Yam, A., Galbany, L., Gall, C., Haislip, J. B., Harmanen, J., Hosseinzadeh, G., Howell, D. A., Hsiao, E. Y., Inserra, C., Jha, S. W.,

Kankare, E., Kilpatrick, C. D., Kouprianov, V. V., Kuncarayakti, H., Maccarone, T. J., Maguire, K., Mattila, S., Mazzali, P. A., McCully, C., Melandri, A., Morrell, N., Phillips, M. M., Pignata, G., Piro, A. L., Prentice, S., Reichart, D. E., Rojas-Bravo, C., Smartt, S. J., Smith, K. W., Sollerman, J., Stritzinger, M. D., Sullivan, M., Taddia, F., Young, D. R. The Early Detection and Follow-up of the Highly Obscured Type II Supernova 2016ija/DLT16am. *The Astrophysical Journal*, 853:62, 1/2018.

Amodeo, S., Mei, S., Stanford, S. A., Lawrence, C. R., Bartlett, J. G., Stern, D., Chary, R.-R., Shim, H., Marleau, F. R., Melin, J.-B., Rodríguez-Gonzálvez, C. Spectroscopic Confirmation and Velocity Dispersions for 20 Planck Galaxy Clusters at 0.16 < z < 0.78. *The Astrophysical Journal*, 853:36, 1/2018.

Feng, F., Jones, H. R. A. 'Oumuamua as a Messenger from the Local Association. *The Astrophysical Journal*, 852:L27, 1/2018.

Ebeling, H., Stockmann, M., Richard, J., Zabl, J., Brammer, G., Toft, S., Man, A. Thirty-fold: Extreme Gravitational Lensing of a Quiescent Galaxy at z = 1.6. *The Astrophysical Journal*, 852:L7, 1/2018.

Miller, A. A., Cao, Y., Piro, A. L., Blagorodnova, N., Bue, B. D., Cenko, S. B., Dhawan, S., Ferretti, R., Fox, O. D., Fremling, C., Goobar, A., Howell, D. A., Hosseinzadeh, G., Kasliwal, M. M., Laher, R. R., Lunnan, R., Masci, F. J., McCully, C., Nugent, P. E., Sollerman, J., Taddia, F., Kulkarni, S. R. Early Observations of the Type Ia Supernova iPTF 16abc: A Case of Interaction with Nearby, Unbound Material and/or Strong Ejecta Mixing. *The Astrophysical Journal*, 852:100, 1/2018.

Wu, J., Jun, H. D., Assef, R. J., Tsai, C.-W., Wright, E. L., Eisenhardt, P. R. M., Blain, A., Stern, D., Díaz-Santos, T., Denney, K. D., Hayden, B. T., Perlmutter, S., Aldering, G., Boone, K., Fagrelius, P. Eddington-limited Accretion in z ˜ 2 WISE-selected Hot, Dust-obscured Galaxies. *The Astrophysical Journal*, 852:96, 1/2018.

Lunnan, R., Chornock, R., Berger, E., Jones, D. O., Rest, A., Czekala, I., Dittmann, J., Drout, M. R., Foley, R. J., Fong, W., Kirshner, R. P., Laskar, T., Leibler, C. N., Margutti, R., Milisavljevic, D., Narayan, G., Pan, Y.-C., Riess, A. G., Roth, K. C., Sanders, N. E., Scolnic, D., Smartt, S. J., Smith, K. W., Chambers, K. C., Draper, P. W., Flewelling, H., Huber, M. E., Kaiser, N., Kudritzki, R. P., Magnier, E. A., Metcalfe, N., Wainscoat, R. J., Waters, C., Willman, M. Hydrogen-poor Superluminous Supernovae from the Pan-STARRS1 Medium Deep Survey. *The Astrophysical Journal*, 852:81, 1/2018.

Conn, B. C., Jerjen, H., Kim, D., Schirmer, M. On the Nature of Ultra-faint Dwarf Galaxy Candidates. I. DES1, Eridanus III, and Tucana V. *The Astrophysical Journal*, 852:68, 1/2018.

Runnoe, J. C., Gültekin, K., Rupke, D. S. N. Does the Compact Radio Jet in PG 1700+518 Drive a Molecular Outflow?. *The Astrophysical Journal*, 852:8, 1/2018.

Reiter, M., Calvet, N., Thanathibodee, T., Kraus, S., Cauley, P. W., Monnier, J., Rubinstein, A., Aarnio, A., Harries, T. J. Linking Signatures of Accretion with Magnetic Field Measurements-Line Profiles are not

Significantly Different in Magnetic and Non-magnetic Herbig Ae/Be Stars. *The Astrophysical Journal*, 852:5, 1/2018.

Bolmer, J., Greiner, J., Krühler, T., Schady, P., Ledoux, C., Tanvir, N. R., Levan, A. J. Dust reddening and extinction curves toward gamma-ray bursts at z > 4. *Astronomy and Astrophysics*, 609:A62, 1/2018.

Appendix D. Science Programs 2017B and 2018A

D.1 2017B Science Programs - Gemini North

Band	Gemini ID	PI Name	Partners	Instrument	Title	Time
CLASSICAL						
C	GN-2017B-C-1	Deleuil	CFH	Graces	Giant planets or stars? Unveiling the nature of brown dwarfs.	0.54 NIGHT
C	GN-2017B-C-2	Fukui	Subaru	GMOS-N	Probing the Skies of the Potentially Habitable Planets	0.50 NIGHT
C	GN-2017B-C-3	Bouvier	CFH	GMOS-N	Lithium and rotation in the 13 Myr-old h Per cluster	0.44 NIGHT
C	GN-2017B-C-5	Narita	Subaru	GMOS-N	Monitoring an Overtaking Double-Transit Event in the TRAPPIST-1 System	0.50 NIGHT
C	GN-2017B-C-6	Dai	AU	GMOS-N	Is PSR J2317+1439 a super massive neutron star?	1.00 NIGHT
LARGE PROGRAMS						
1	GN-2017B-LP-10	Foley	LP	GMOS-N	DES Supernova Cosmology	54.50 HR
1	GN-2017B-LP-11	Hsieh	LP	GMOS-N	Observational Characterization of Active Main-Belt Comets and Main-Belt Comet Nuclei	6.52 HR
1	GN-2017B-LP-13	Garnavich	LP	GMOS-N	The K2 Supernova Experiment - Campaigns 16 and 17	4.15 HR
1	GN-2017B-LP-14	Garnavich	LP	GMOS-N	The K2 Supernova Experiment - Campaigns 16 and 17	3.63 HR
2	GN-2017B-LP-15	Stanford	LP	GMOS-N	MaDCoWS: The Massive and Distant Clusters of WISE Survey	17.41 HR
2	GN-2017B-LP-16	Shemmer	LP	GNIRS	Placing High-Redshift Quasars in Perspective: a Gemini Near-Infrared Spectroscopic Survey	56.16 HR
FAST TURNAROUND						
1	GN-2017B-FT-1	Fan	US	GMOS-N	Gemini Spectroscopic Confirmations of Three Luminous Reionization-Era Quasars at z=6.5-7.2	4.40 HR
1	GN-2017B-FT-2	Kilic	US	GMOS-N	The First Double Magnetic White Dwarf Binary	5.00 HR
1	GN-2017B-FT-5	Blanchard	US	GMOS-N	Nebular Phase Spectrum of an Unusual Superluminous Supernova	2.00 HR
1	GN-2017B-FT-6	Chene	US	GMOS-N	Microlensing black holes and their masses from Gaia	2.50 HR
1	GN-2017B-FT-7	Yoon	US	GMOS-N	Best and Farthest Survey : Searching for Ultra Metal-Poor stars in the Outermost Halo of the Galaxy	6.30 HR
1	GN-2017B-FT-8	Schirmer	US	GMOS-N	Characterizing low-redshift Lyman-alpha blobs	3.50 HR
1	GN-2017B-FT-10	Vestergaard	US	GMOS-N,GNIRS	Observing the re-ignition of the AGN in Mrk 590	4.50 HR
1	GN-2017B-FT-11	Scharwaechter	US	GMOS-N	A Perseus Cluster filament under the microscope	3.30 HR
1	GN-2017B-FT-12	Schwamb	US	GMOS-N	Towards Confirming and Characterizing A New Surface Type in the Kuiper Belt	2.30 HR
1	GN-2017B-FT-20	Lee	JP	GMOS-N	Nebular spectra of superluminous supernova SN 2017egm	4.00 HR
1	GN-2017B-FT-21	Gagnv©	US	GNIRS	Confirming a new L/T transition planetary-mass object in AB Doradus	2.50 HR
1	GN-2017B-FT-22	Xu	US	F-2,NIRI	Phase Curve of the Strongly Irradiated Brown Dwarf WD 1202-024B	4.30 HR
1	GN-2017B-FT-23	Ueta	US	GMOS-N	Comprehensive Panchromatic Analysis of the O-rich Planetary Nebula NGC2392 with GMOS Slit-Scan Spectra	3.83 HR
2	GN-2017B-FT-3	Ono	JP	GMOS-N	Extremely large area search for high-redshift metal-poor young galaxies with Subaru/HSC	3.60 HR
2	GN-2017B-FT-4	Lee	JP	GMOS-N	Determine the velocity dispersion and redshifts of the quadruply lensed quasar PSO J0147+4630	1.70 HR
2	GN-2017B-FT-9	Wisniewski	US	NIRI	Diagnosing New Ultra-Cool Brown Dwarf Candidates	4.90 HR

2	GN-2017B-FT-13	Tanaka	JP	GMOS-N	Redshift measurement of possible IceCube neutrino source TXS 0506+056	2.40 HR
2	GN-2017B-FT-14	Pike	JP	GMOS-N	Cometary Precursors: The nuclei of JFCs and Oort Cloud comets	2.86 HR
2	GN-2017B-FT-15	Leggett	US	NIRI	Four-Micron Imaging of Two Cool Binary Systems	1.65 HR
2	GN-2017B-FT-16	Lin	US	GMOS-N	The Spectral-Type Confrimation for the First Super-Fast Rotator in the Outer Main Belt	1.30 HR
2	GN-2017B-FT-17	Stauffer	US	GMOS-N	Lithium and rotation in the 13 Myr-old h Per cluster	3.72 HR
2	GN-2017B-FT-18	Tang	JP	GNIRS	The coolest brown dwarf ever been discovered in star cluster	1.00 HR
2	GN-2017B-FT-19	Cucchiara	US	GMOS-N	GRB171027A: Probing Cosmic Dawn	3.60 HR
QUEUE, BANDS 1-3						
1	GN-2017B-Q-1	Banados	US	GMOS-N, GNIRS,NIRI	The Gemini North search for the first QSOs	35.50 HR
1	GN-2017B-Q-2	Bastien	CA	GMOS-N	Variability of the active RY Tauri bipolar jet	2.00 HR
1	GN-2017B-Q-3	Bright	US	Graces	Establishing the Next Generation of Absolute Flux Calibrators: Looking Beyond Vega	21.90 HR
1	GN-2017B-Q-4	Burgasser	US	GMOS-N	Mass Measurements Across the Hydrogen Burning Limit: Astrometric Orbits for Spectral Binaries (Northern Sample)	11.50 HR
1	GN-2017B-Q-5	Chambers	UH	GMOS-N	Pan-STARRS counterparts to LIGO GW events, IceCube neutrino events and rare transients	16.00 HR
1	GN-2017B-Q-6	Chene	J:CA Rejected: US	GMOS-N	Going after the driver of clumps (North)	4.10 HR
1	GN-2017B-Q-7	Cucchiara	US	GMOS-N, GNIRS,NIRI	High-Redshift Gamma-Ray Bursts as Probes of Cosmic Dawn (North)	9.23 HR
1	GN-2017B-Q-8	Esplin	US	GNIRS	Measuring the Substellar IMF in Taurus	20.00 HR
1	GN-2017B-Q-9	Fan	US	GNIRS	Near-IR Spectroscopic Observations of Two Newly Discovered Luminous Quasars at z>6.5	14.20 HR
1	GN-2017B-Q-10	Gizis	US	GNIRS	Dust Clouds and Aurora in Ultracool Dwarfs: A K2 and Gemini Campaign	7.50 HR
1	GN-2017B-Q-11	Grossi	BR	GMOS-N	Starburst dwarf galaxies at intermediate redshift: insights from resolved observations of the ionized gas	8.50 HR
1	GN-2017B-Q-12	Howell	US	GMOS-N	Probing Supernova Progenitors from the Global Supernova Project (North)	11.00 HR
1	GN-2017B-Q-13	Jayawardhana	CA	GMOS-N	The search for TiO and VO: probing the dayside of newly-discovered hot Jupiter KELT-16b	12.20 HR
1	GN-2017B-Q-14	Jencson	US	GNIRS,NIRI	Confirming Obscured Supernova Candidates with Gemini (North)	3.70 HR
1	GN-2017B-Q-15	Jofré	AR	Graces	Stability and precision of GRACES for exoplanet detection and characterization	2.30 HR
1	GN-2017B-Q-16	Kellogg	CA	GNIRS	Characterizing the Most Unsually Dusty Old L Dwarf	4.50 HR
1	GN-2017B-Q-17	Lee	KR	GMOS-N	Mapping the Young Stellar Populations of E+A Galaxies with Different Star Formation Histories	12.80 HR
1	GN-2017B-Q-18	Lee	KR	Graces	Investigation of Progenitors of Ultra Metal-Poor (UMP) Stars by High-Resolution Spectroscopy with GRACES	10.20 HR
1	GN-2017B-Q-19	Magnier	UH	GNIRS	Young Free-Floating Planets in the Taurus Star-Forming Region	5.80 HR
1	GN-2017B-Q-20	Massey	US	GMOS-N	The Wolf-Rayet Content of IC10: Probing the Nearest Starburst Galaxy	10.20 HR
1	GN-2017B-Q-21	Meech	UH	GMOS-N,NIRI	The Manx Comets ? Testing Solar System Formation Models	11.02 HR
1	GN-2017B-Q-22	Meech	UH	GMOS-N,NIRI	The Manx Comets ? Testing Solar System Formation Models	3.78 HR
1	GN-2017B-Q-23	Melis	US	NIRI	Does SDSSJ195750.83+340404.4 accrete from a circumstellar disk made of a planetary core?	0.90 HR

1	GN-2017B-Q-24	Overzier	BR	GMOS-N	Spectroscopic confirmation of Subaru/HSC Protoclusters at z = 4	8.80 HR
1	GN-2017B-Q-25	Paron	AR	NIRI	Studying the circumstellar environment of massive young stellar objects	5.60 HR
1	GN-2017B-Q-26	Riffel	BR	GMOS-N	Gas rotation or outflow? Probing the gas kinematics of the inner region of a prototype Red Geyser	1.90 HR
1	GN-2017B-Q-27	Ruan	CA	GMOS-N	Are Changing-Look Quasars Actually Tidal Disruption Events?	3.90 HR
1	GN-2017B-Q-28	Sawicki	CA	GMOS-N	Spectroscopy of very luminous z~6 galaxies from the HSC Survey	24.00 HR
1	GN-2017B-Q-29	Schaefer	US	NIRI	Variability and Orbital Motion in the T Tauri Triple System	5.90 HR
1	GN-2017B-Q-30	Shafter	US	GMOS-N	M31N 2008-12a - The Remarkable Recurrent Nova in M31: Gemini Spectra of the 2017 Eruption and surrounding 'Super-remnant'	7.90 HR
1	GN-2017B-Q-31	Stockton	UH	GMOS-N	Low Redshift Compact Passive Galaxy Survivors from High-z	6.50 HR
1	GN-2017B-Q-32	Tremblay	US	GMOS-N	Monitoring changing-look AGN Mrk 1018 as its central engine reignites (North)	3.03 HR
1	GN-2017B-Q-33	Treu	US	GMOS-N	A reverberation mapping black hole mass measurement at z=2.82	8.00 HR
1	GN-2017B-Q-34	Wiegert	CA	GMOS-N	Unusual asteroid 3200 Phaethon during a particularly close approach	2.00 HR
2	GN-2017B-Q-35	Albert	CA	GNIRS	Spectroscopy of Taurus Star Forming Region Candidates Down to 3 Jupiter Masses	21.10 HR
2	GN-2017B-Q-36	Bassino	AR	GMOS-N	Globular cluster systems of intermediate-luminosity early-type galaxies	5.50 HR
2	GN-2017B-Q-37	Bezanson	US	GMOS-N	The Morphological Transformation as Revealed by Age Gradients and Rotational Support in Post-starburst Galaxies at z~0.6 (North)	13.48 HR
2	GN-2017B-Q-38	Carpes	BR	GMOS-N	The Inner Structure of OH Megamaser Merger Galaxies (North)	4.53 HR
2	GN-2017B-Q-39	Fohring	UH	GMOS-N,GNIRS	The Lunar Origin of Low Delta-V NHATS Asteroids	11.00 HR
2	GN-2017B-Q-40	Fontanive	US	NIRI	A Targeted Search for Wide Companions as a Test of Gravitational Instability	4.40 HR
2	GN-2017B-Q-41	Gamen	AR	GNIRS	Hunting the sources related to the formation of massive star/s in the compact HII region G025.7961+00.2403	1.40 HR
2	GN-2017B-Q-42	Glikman	US	GNIRS	Beyond the Tip of the Iceberg: Finding Red Quasars in Deep Infrared Imaging over the 115 deg2 of Stripe 82	15.90 HR
2	GN-2017B-Q-43	Green	US	GMOS-N	Changing-Look Quasars: Radical Changes in Accretion Rate? (North)	5.00 HR
2	GN-2017B-Q-44	Hahn	BR	GMOS-N	GMOS+NIFS survey of feeding and feedback processes in nearby Active Galaxies	2.80 HR
2	GN-2017B-Q-45	Jofré	BR	Graces	Stability and precision of GRACES for exoplanet detection and characterization	7.10 HR
2	GN-2017B-Q-46	Laycock	US	GMOS-N	Blue Supergiant X-ray Binaries in our Nearest Starburst Galaxy	13.20 HR
2	GN-2017B-Q-47	Lee	KR	GMOS-N	Optical Spectroscopy of Dense Fe Ejecta in Cassiopeia A Superova Remnant	5.74 HR
2	GN-2017B-Q-48	Melis	US	Graces	A Search for Pre-Main Sequence Spectroscopic Binaries in the Pleiades	31.20 HR
2	GN-2017B-Q-49	Moskovitz	US	GMOS-N	The Mission Accessible Near-Earth Object Survey (North)	10.00 HR
2	GN-2017B-Q-50	Pichel	AR	GMOS-N	The Controversial Blazar S20109+22	2.20 HR

2	GN-2017B-Q-51	Richards	US	GNIRS	Discovery and Investigation into the Type-2 High-redshift QSO Population	32.50 HR
2	GN-2017B-Q-52	Sand	US	GNIRS	Constraining Type Ia Supernova Physics with Near-Infrared Spectroscopy (North)	11.30 HR
2	GN-2017B-Q-53	Shin	KR	GNIRS	The first revealing the FeII/MgII-luminosity relation of high redshift QSOs	10.00 HR
2	GN-2017B-Q-54	Simon	US	Graces	Is There Small-Scale Structure in the ISM Along the Line of Sight to the WTF Star?	24.30 HR
2	GN-2017B-Q-55	Spina	BR	Graces	Unveiling chemical signatures of triggered star formation in the Orion B NGC2068/71 clusters	5.80 HR
2	GN-2017B-Q-56	Tannock	CA	GNIRS	Brown Dwarfs Viewed Equator-on: Seeking the Best Hosts for Biosignature Detection in Transiting Exoplanets	25.40 HR
2	GN-2017B-Q-57	Williams	UH	Graces	Accretion & wind properties of protoplanetary disks in ? Orionis	30.00 HR
3	GN-2017B-Q-58	Allers	US	GNIRS	Spectroscopic Rotational Velocities of Exoplanet Analogs	17.60 HR
3	GN-2017B-Q-59	Carlin	US	Graces	Recreating the chemical evolution of the Sagittarius dwarf spheroidal from its tidal debris	15.60 HR
3	GN-2017B-Q-60	Chambers	UH	GMOS-N	Pan-STARRS counterparts to LIGO GW events, IceCube neutrino events and rare transients	10.10 HR
3	GN-2017B-Q-61	Chick	US	GMOS-N	Characterization of Bowshock Supporting Massive Runaway Stars	11.60 HR
3	GN-2017B-Q-62	Cunningham	CA	GNIRS	Studying the line emitters from the CFHT-NB survey	30.00 HR
3	GN-2017B-Q-63	Ferrero	AR	GNIRS	A High Resolution Near Infrared Spectral Atlas of O stars with Gemini	7.00 HR
3	GN-2017B-Q-64	Fohring	UH	GMOS-N,GNIRS	The Lunar Origin of Low Delta-V NHATS Asteroids	9.00 HR
3	GN-2017B-Q-65	Jha	US	GMOS-N	Spectroscopy of Type Iax Supernovae (North)	4.40 HR
3	GN-2017B-Q-66	Ji	J:CA Rejected: US	Graces	Chemically confirming the nature of the dwarf galaxy candidate Triangulum II	6.50 HR
3	GN-2017B-Q-67	Karnath	US	GNIRS	GNIRS Spectroscopy of Orion Protostars: Placing Constraints on the Initial Conditions of Pre-Main Sequence Contraction and the Ages of Young Stellar Populations	8.40 HR
3	GN-2017B-Q-68	Lee	KR	GNIRS	NIR observations of [Fe II]-emitting SNRs (North)	6.00 HR
3	GN-2017B-Q-69	Lilly	UH	GMOS-N	Searching for activity in Centaurs discovered by Pan-STARRS1	5.00 HR
3	GN-2017B-Q-70	Ly	US	GNIRS	Recalibrating Strong-line Metallicity Diagnostics for z > 1 Chemical Enrichment Studies, with T_e-based Metallicities from MACT and DEEP2	3.80 HR
3	GN-2017B-Q-71	Meech	UH	GMOS-N,NIRI	The Manx Comets ? Testing Solar System Formation Models	1.90 HR
3	GN-2017B-Q-72	Pelisoli	BR	GMOS-N	Where are the cool extremely-low mass white dwarfs? (North)	6.00 HR
3	GN-2017B-Q-73	Peterson	US	GNIRS	The first spectroscopic dust reverberation program on a narrow-line Seyfert 1 galaxy: case study Mrk 110	10.10 HR
3	GN-2017B-Q-74	Sanmartim	US	GMOS-N	Opening the treasury box: GMOS-N IFU observations of 100 to 300 solar masses stars in the Andromeda galaxy	4.40 HR
3	GN-2017B-Q-75	Schlaufman	US	GMOS-N	An All-Sky Search for the Brightest Metal-poor Stars (North)	46.00 HR
3	GN-2017B-Q-76	Stroe	US	GMOS-N	Cosmic tsunamis: the effect of shocks on star forming cluster galaxies	7.40 HR
3	GN-2017B-Q-77	Takir	US	GNIRS	Searching for Volatiles and Organics in the Outer Main Asteroid Belt	18.80 HR
3	GN-2017B-Q-78	Yana Galarza	BR	Graces	The influence of metallicity on the formation of rocky planets	6.30 HR

QUEUE, BAND 4 (POOR WEATHER)						
4	GN-2017B-Q-79	Schlaufman	US	GMOS-N	An All-Sky Search for the Brightest Metal-poor Stars (North)	70.00 HR
4	GN-2017B-Q-80	Ferrero	AR	GNIRS	A High Resolution Near Infrared Spectral Atlas of O stars with Gemini	3.20 HR
4	GN-2017B-Q-81	Cochetti	AR	GNIRS	Structure and physical properties of circumestellar envelopes of Be stars	7.84 HR
4	GN-2017B-Q-82	Gamen	AR	GMOS-N	Characterizing the earliest stellar population in four galactic open clusters.	7.00 HR
4	GN-2017B-Q-83	Xu	GS	GMOS-N	Variability in the Accretion Rate of A Heavily Polluted White Dwarf	2.00 HR
4	GN-2017B-Q-84	Placco	GS	GMOS-N	Identification of Low-Metallicity Stars from Narrow Band Photometry	39.00 HR
4	GN-2017B-Q-85	Andersen	GS	GNIRS	Binarity among metal-poor M dwarfs: the way forward to dynamical masses	80.00 HR
4	GN-2017B-Q-86	Arias	AR	GNIRS	Time evolution of EW Lac's circumstellar envelope	0.70 HR
DIRECTOR'S DISCRETIONARY TIME						
1	GN-2017B-DD-1	Kama	DD	GMOS-N	Mass loss and composition of the extreme Hot Jupiter KELT-9 b	.50 HR
1	GN-2017B-DD-2	Kool	DD	GNIRS	GNIRS spectroscopy of TDE candidate AT 2017gbl	1.20 HR
1	GN-2017B-DD-3	Smith	DD	GMOS-N, GMOS-S	Strong-lensing Galaxy Clusters	5.20 HR
1	GN-2017B-DD-4	Koptelova	DD	GMOS-N	GMOS spectroscopy of two z~7 QSO candidates detected in CO with ALMA	2.60 HR
1	GN-2017B-DD-5	Rho	DD	GNIRS	Continued Monitoring of Carbon Monoxide and Dust Emission in SN2017eaw	2.40 HR
1	GN-2017B-DD-6	Andre	DD	NIRI	Gemini/NIRI detection of H3+ aurorae at Uranus triggered by an unexpected powerful solar storm	6.30 HR
1	GN-2017B-DD-7	Guzik	DD	GMOS-N	First Interstellar Comet in Solar System	9.70 HR
1	GN-2017B-DD-8	Bannister	DD	GMOS-N, NIRI	Comparing the colour of the first interstellar minor planet to our Solar System's distant minor planets	2.00 HR
1	GN-2017B-DD-11	Geballe	DD	NIRI	IR Imaging of NGC 2071 IRS1 and its environment	1.20 HR
2	GN-2017B-DD-9	Dai	DD	GMOS-N	Is PSR J2317+1439 a super massive neutron star?	3.60 HR
2	GN-2017B-DD-10	Ono	DD	GMOS-N	Spectroscopic confirmation of the most distant galaxy cluster at the epoch of reionization z=6.57	7.90 HR
2	GN-2017B-DD-12	Balogh	DD	GMOS-N, GMOS-S	Completion of highest priority GOGREEN clusters	4.30 HR

D.2 2017B Science Programs - Gemini South

Band	Gemini ID	PI Name	Partners	Instrument	Title	Time
CLASSICAL						
C	GS-2017B-C-1	Aussel	CFH	GMOS-S	Exact redshift for two new z > 0.7 massive clusters	0.66 NIGHT
C	GS-2017B-C-2	Taylor	AU	F-2	The next frontier: massive galaxies at 4 < z < 6	2.00 NIGHT
C	GS-2017B-C-3	Day	AU	GMOS-S	Testing the Validity of the Extraordinary Amount of Dark Matter Haloes in Abell 2744	1.00 NIGHT
LARGE PROGRAMS						
1	GS-2017B-LP-1	Balogh	LP	GMOS-S	The GOGREEN Survey of dense galaxy environments at 1<z<1.5	38.61 HR
2	GS-2017B-LP-6	Chen	LP	GPI	Characterizing Dusty Debris in Exoplanetary Systems	20.80 HR
2	GS-2017B-LP-10	Foley	LP	GMOS-S	DES Supernova Cosmology	54.50 HR

1	GS-2017B-LP-11	Hsieh	LP	GMOS-S	Observational Characterization of Active Main-Belt Comets and Main-Belt Comet Nuclei	5.75 HR
1	GS-2017B-LP-12	Monnier	LP	GPI	Scattered Light imaging of YSOs: Probing the Fundamental Stages of Planet Formation	21.00 HR
1	GS-2017B-LP-13	Garnavich	LP	GMOS-S	The K2 Supernova Experiment - Campaigns 16 and 17	15.10 HR
1	GS-2017B-LP-14	Garnavich	LP	GMOS-S	The K2 Supernova Experiment - Campaigns 16 and 17	13.30 HR
1	GS-2017B-LP-15	Stanford	LP	GMOS-S	MaDCoWS: The Massive and Distant Clusters of WISE Survey	5.12 HR
FAST TURNAROUND						
1	GS-2017B-FT-1	Yamashita	JP	GMOS-S	Exploring the most distant radio galaxies	2.70 HR
1	GS-2017B-FT-3	Bahramian	US	GMOS-S	Determining nature of a peculiar high-energy binary in a globular cluster	3.70 HR
1	GS-2017B-FT-4	More	JP	F-2	MG 2016+112: studying the highest redshift lensed type 2 AGN, and a "natural" coronagraph	3.50 HR
1	GS-2017B-FT-5	Jaelani	US	GMOS-S	HSCJ0904-0102: Spectroscopic confirmation of a tentative high redshift gravitationally lensed quasar	1.65 HR
1	GS-2017B-FT-6	Schirmer	US	GMOS-S	Characterizing low-redshift Lyman-alpha blobs	3.70 HR
1	GS-2017B-FT-7	More	JP	GMOS-S	A revolutionary sample of low redshifts strong lenses discovered with MaNGA	1.77 HR
1	GS-2017B-FT-8	Ward-Duong	US	GPI	Investigating an Unusually Cool, Old Brown Dwarf with the Gemini Planet Imager	4.99 HR
1	GS-2017B-FT-12	Lacy	US	F-2,GMOS-S	The field of the hyperluminous quasar HE0515-4414	3.10 HR
1	GS-2017B-FT-13	Salinas	US	GMOS-S	NGC 1600: a key object in the SMBH-GC relation	4.10 HR
1	GS-2017B-FT-16	Papovich	US	F-2	The next frontier: massive galaxies at 4 < z < 6	10.00 HR
2	GS-2017B-FT-2	Salinas	US	GMOS-S	The role of stellar variability in extended main sequence turnoff star clusters	4.50 HR
2	GS-2017B-FT-9	Otsuka	JP	GMOS-S	Investigations of warm-cold dust mass and gas-to-dust mass ratio in LMC PNe (II)	3.96 HR
2	GS-2017B-FT-10	Kahre	US	GMOS-S	Metallicity gradient in NGC 7793: A detailed study of the relationship between the dust-to-gas ratio and the metalicity gradient	3.80 HR
2	GS-2017B-FT-11	Escudero	AR	GMOS-S	Stellar population analysis of the bright elliptical shell galaxy NGC 1395	3.20 HR
2	GS-2017B-FT-14	Estrela	BR	GMOS-S	The first detection of a terrestrial exoplanet atmosphere around a bright K dwarf	2.30 HR
2	GS-2017B-FT-15	Li	US	GMOS-S	A Spectroscopic Study of the Compact Binary 3FGL J0954.8-3948	4.00 HR
2	GS-2017B-FT-17	Yamashita	JP	GMOS-S	Exploring the most distant radio galaxies	4.40 HR
QUEUE, BANDS 1-3						
1	GS-2017B-Q-1	Agliozzo	CL	GMOS-S	GMOS-S IFU observations of presumably helical nebulae around two Magellanic LBVs	3.30 HR
1	GS-2017B-Q-2	Bahramian	J:CA/US	F-2	Determining the nature of donor stars in sub-luminous transient X-ray binaries	8.72 HR
1	GS-2017B-Q-3	Beamin	CL	GSAOI	Trigonometric parallax of ancient T dwarf WISE0833+0052 (2017B)	2.50 HR
1	GS-2017B-Q-4	Beamin	CL	Phoenix	On the origin of the free floating planet OTS44	3.80 HR
1	GS-2017B-Q-5	Bechtol	US	GMOS-S	Revealing the Sources of High-Energy Astrophysical Neutrinos	7.00 HR
1	GS-2017B-Q-6	Burgasser	US	GMOS-S	Mass Measurements Across the Hydrogen Burning Limit: Astrometric Orbits for Spectral Binaries	11.30 HR
1	GS-2017B-Q-7	Chapman	J:US/CA	F-2,GMOS-S	Optical followup of the SPT2349-56 protocluster at z=4.3	20.90 HR
1	GS-2017B-Q-8	Chornock	US	F-2,GMOS-S	Confirmation of Optical Counterparts to LIGO/Virgo Sources Found with DECam	7.80 HR

1	GS-2017B-Q-9	Cucchiara	US	F-2,GMOS-S	High-Redshift Gamma-Ray Bursts as Probes of Cosmic Dawn (South)	5.77 HR
1	GS-2017B-Q-10	Drout	CA	GMOS-S	Spectroscopy of Infant Supernova and Rapid Transients Discovered by the KMTNet Supernova Project	9.00 HR
1	GS-2017B-Q-11	Faifer	J:BR/AR	F-2,GMOS-S	The true colors of globular cluster systems: the case of NGC 6861	7.20 HR
1	GS-2017B-Q-12	Fong	US	F-2,GMOS-S	Probing the Properties of Compact Object Mergers: Rapid Observations of Short Gamma-ray Bursts (South)	4.90 HR
1	GS-2017B-Q-13	Grossi	BR	GMOS-S	Metal abundances and CO-to-H2 conversion factor in Fornax star-forming dwarf galaxies.	10.80 HR
1	GS-2017B-Q-14	Howell	US	GMOS-S	Probing Supernova Progenitors from the Global Supernova Project (South)	11.00 HR
1	GS-2017B-Q-15	Jencson	US	F-2	Confirming Obscured Supernova Candidates with Gemini (South)	3.70 HR
1	GS-2017B-Q-16	Jensen-Clem	US	GPI	The detection of polarized radiation from brown dwarf companions to nearby main sequence stars	9.50 HR
1	GS-2017B-Q-17	Jensen-Clem	US	GPI	The first detection of polarized radiation from exoplanets: HR8799cd	4.70 HR
1	GS-2017B-Q-18	Jeong	KR	F-2	Nature of High-Redshift Dust-Obscured Galaxies in the ADF-S	8.00 HR
1	GS-2017B-Q-19	Kerber	BR	GMOS-S	Disentangling the complex chemical evolution of the SMC with GMOS	7.00 HR
1	GS-2017B-Q-20	Kim	KR	GMOS-S	Rare opportunity to examine a merging BCG and matter distribution in galaxy cluster	16.26 HR
1	GS-2017B-Q-21	Lee	KR	GMOS-S	Spectroscopic follow-up of infant supernovae found in the real-time KMTNet Supernova Search	4.00 HR
1	GS-2017B-Q-22	Nielsen	US	GPI	Orbits of Moving Group Binaries: Constraining the Ages of Planet-Hosting Moving Groups using GPI NRM Astrometric Monitoring	11.40 HR
1	GS-2017B-Q-23	Piatti	AR	GMOS-S	Unveiling the origin of the LMC clusters NGC1928 and NGC1939	1.90 HR
1	GS-2017B-Q-24	Pineda	US	GMOS-S	Rotational Evolution of M-dwarf Magnetic Activity: Connecting UV and Optical Emission Features	4.70 HR
1	GS-2017B-Q-25	Puzia	CL	GSAOI	The GeMS/GSAOI Galactic Globular Cluster Survey (G4CS)	5.40 HR
1	GS-2017B-Q-26	Rameau	CA	GPI	Imaging other worlds around remarkable stars with GPI (Part 2)	15.00 HR
1	GS-2017B-Q-27	Rodriguez	CL	GMOS-S	Testing Type II supernovae as cosmological probes at near-infrared wavelengths	19.00 HR
1	GS-2017B-Q-28	Tejos	J:CL/US	GMOS-S	Rapid Imaging and Spectroscopic Follow-up of Fast Radio Bursts	20.00 HR
1	GS-2017B-Q-29	Tremblay	US	GMOS-S	Monitoring changing-look AGN Mrk 1018 as its central engine reignites (South)	21.07 HR
1	GS-2017B-Q-30	Troja	US	F-2,GMOS-S	Unveiling the elusive progenitors of short duration gamma-ray bursts (South)	2.70 HR
1	GS-2017B-Q-31	Tucci Maia	BR	Phoenix	Phophorus: a fundamental block of life in Solar Twins	5.50 HR
2	GS-2017B-Q-32	Arias	AR	Phoenix	Studying the kinematics of disks around Magellanic Clouds B[e] supergiants by modeling CO emission	4.00 HR
2	GS-2017B-Q-33	Assef	CL	GMOS-S	Lyman Break Galaxy Companions to the Most Luminous Galaxy	7.60 HR
2	GS-2017B-Q-34	Baron	CA	F-2	WEIRD : Wide orbit Exoplanet search with InfraRed Direct imaging	17.53 HR
2	GS-2017B-Q-35	Bezanson	US	GMOS-S	The Morphological Transformation as Revealed by Age Gradients and Rotational Support in Post-starburst Galaxies at z~0.6 (South)	8.32 HR
2	GS-2017B-Q-36	Canning	US	GMOS-S	The role of environment in triggering/quenching X-ray AGN.	27.70 HR

2	GS-2017B-Q-37	Carpes	BR	GMOS-S	The Inner Structure of OH Megamaser Merger Galaxies (South)	2.67 HR
2	GS-2017B-Q-38	Caso	J:AR/CL	GMOS-S	Moving to suburbs: wide-field study of a field elliptical with a rich globular cluster system	3.30 HR
2	GS-2017B-Q-39	Cieza	J:CL/AR	GMOS-S	Testing the disk-regulation paradigm: GMOS spectroscopy of periodic stars in Mon R2	8.50 HR
2	GS-2017B-Q-40	Conn	US	GMOS-S	A Census of Satellites: Morphology, Metallicity and Mass Segregation in the newest MW Satellites	5.50 HR
2	GS-2017B-Q-41	D'Andrea	US	F-2	Constraining Progenitor Models for High-z Superluminous Supernovae in DES	23.20 HR
2	GS-2017B-Q-42	Fernandes	BR	F-2	Uncovering new embedded stellar clusters in the CMa OB1/R1 Association with Flamingos-2	8.50 HR
2	GS-2017B-Q-43	Gonzalez	CL	GMOS-S	Incidence of high-ionization lines at high-z: testing the episodic star formation history scenario.	11.00 HR
2	GS-2017B-Q-44	Green	US	GMOS-S	Changing-Look Quasars: Radical Changes in Accretion Rate? (South)	5.00 HR
2	GS-2017B-Q-45	Kim	KR	F-2	Black Hole Mass Estimation of Faint Quasars at z~5: Could there be high redshift quasars with low Eddington ratio?	13.00 HR
2	GS-2017B-Q-46	Ko	KR	GMOS-S	Tracing the origin of the intracluster light in massive galaxy clusters at z > 1:a case of MOO J1014+0038	10.00 HR
2	GS-2017B-Q-47	Maas	US	Phoenix	Phosphorus Abundances in the Hyades and Galactic Disk	18.30 HR
2	GS-2017B-Q-48	Monteiro-Oliveira	BR	GMOS-S	Unveiling the nature of the merging galaxy cluster MACS J0553.4-3342	7.70 HR
2	GS-2017B-Q-49	Morokuma	Subaru	GMOS-S	Tidal Disruption Event Rate Measurement at z~0.5	5.00 HR
2	GS-2017B-Q-50	Moskovitz	US	GMOS-S	The Mission Accessible Near-Earth Object Survey (South)	30.00 HR
2	GS-2017B-Q-51	Olivares	CL	GMOS-S	New Approaches to Supernova Standardisation for Cosmology	12.00 HR
2	GS-2017B-Q-52	Petrucci	AR	GMOS-S	Unveiling the "mysterious" component in the atmosphere of Wasp-98b with transmission spectroscopy	3.90 HR
2	GS-2017B-Q-53	Puzia	CA	GSAOI	The GeMS/GSAOI Galactic Globular Cluster Survey (G4CS)	10.00 HR
2	GS-2017B-Q-54	Rettura	US	F-2,GMOS-S	The Gemini survey of the most distant galaxy clusters in the ~100deg2 Spitzer-SPT Deep Field	11.10 HR
2	GS-2017B-Q-55	Rodruck	US	GMOS-S	Stellar Populations in Tidal Tails	3.60 HR
2	GS-2017B-Q-56	Romero	BR	GMOS-S	Spectroscopy of massive DB white dwarf candidate stars	3.20 HR
2	GS-2017B-Q-57	Salinas	US	GMOS-S	Constraining the origin of globular cluster abundance anomalies with SMC intermediate-age clusters	4.90 HR
2	GS-2017B-Q-58	Sand	US	F-2	Constraining Type Ia Supernova Physics with Near-Infrared Spectroscopy (South)	15.90 HR
2	GS-2017B-Q-59	Stanghellini	US	GMOS-S	Time evolution of metallicity gradients: oxygen abundance measurements for young and old metallicity probes in NGC 628	11.00 HR
2	GS-2017B-Q-60	Willott	CA	GMOS-S	Massive mergers in the early universe: the first complete UV-optical study	14.70 HR
3	GS-2017B-Q-61	Brittain	US	Phoenix	The Search for Forming Planets in Transition Disks	11.30 HR
3	GS-2017B-Q-62	Chene	J:CA	GMOS-S	Going after the driver of clumps (South)	5.00 HR
3	GS-2017B-Q-63	Ellison	CA	GMOS-S	Neutral hydrogen in distant radio galaxies - new discoveries with ASKAP	14.00 HR
3	GS-2017B-Q-64	Faifer	CA	F-2,GMOS-S	The true colors of globular cluster systems: the case of NGC 6861	6.00 HR
3	GS-2017B-Q-65	Folatelli	AR	GMOS-S	The Progenitor of the "Argentine Supernova" SN 2016gkg	2.40 HR
3	GS-2017B-Q-66	Jao	US	Phoenix	Search Close Companions Around Cool Subdwarfs	21.20 HR
3	GS-2017B-Q-67	Jha	US	GMOS-S	Spectroscopy of Type Iax Supernovae (South)	2.51 HR

3	GS-2017B-Q-68	Lee	KR	F-2	NIR observations of [Fe II]-emitting SNRs (South)	3.00 HR
3	GS-2017B-Q-69	Méndez	CL	GMOS-S, Phoenix	SPECTRAL STUDY OF A SELECTED SET OF SOUTHERN BINARY STARS WITH RESOLVED ORBITS	26.80 HR
3	GS-2017B-Q-70	Pelisoli	BR	GMOS-S	Where are the cool extremely-low mass white dwarfs? (South)	12.50 HR
3	GS-2017B-Q-71	Piatti	CA	GMOS-S	Unveiling the origin of the LMC clusters NGC1928 and NGC1939	1.90 HR
3	GS-2017B-Q-72	Romero	US	GMOS-S	Spectroscopy of massive DB white dwarf candidate stars	3.00 HR
3	GS-2017B-Q-73	Rotermund	J:US/CA	F-2,GMOS-S	Additional Optical followup of the new Cycle3 ALMA-SPT sample of lensed submillimeter galaxies	26.90 HR
3	GS-2017B-Q-74	Saker	AR	GMOS-S	Gaseous disks in white dwarfs	2.40 HR
3	GS-2017B-Q-75	Schlaufman	US	GMOS-S	An All-Sky Search for the Brightest Metal-poor Stars (South)	23.00 HR
3	GS-2017B-Q-76	Sifon	US	GMOS-S	Spectroscopic confirmation of distant galaxy clusters discovered with ACTPol	22.40 HR
3	GS-2017B-Q-77	Stevans	US	GMOS-S	Spectroscopic Confirmation of the Brightest Galaxies at z=4	14.80 HR
3	GS-2017B-Q-78	Sun	US	GMOS-S	Are there bi-polar AGN outflows? -- IFU study of extended outflow candidates selected with Subaru Hyper-Suprime Cam survey	11.00 HR
3	GS-2017B-Q-79	Torres	AR	Phoenix	Resolving the kinematics within the molecular envelopes of two yellow hypergiants in the Large Magellanic Cloud.	3.40 HR
3	GS-2017B-Q-80	Weidmann	AR	GMOS-S	Searching for white dwarfs in planetary nebulae: spectroscopic confirmation	2.40 HR
3	GS-2017B-Q-81	Williams	US	GMOS-S	Deep imaging of host galaxies of extreme AGNs	14.00 HR
3	GS-2017B-Q-82	Zenteno	US	GMOS-S	Clash of Titans: a dynamical study of a sample of massive galaxy clusters undergoing extreme mergers	14.40 HR
3	GS-2017B-Q-83	Zhang	US	GMOS-S	GMOS spectroscopic follow-ups for three 1.0<z<1.15 galaxy clusters selected with Dark Energy Survey Data	19.80 HR
QUEUE, BAND 4 (POOR WEATHER)						
4	GS-2017B-Q-84	Schlaufman	US	GMOS-S	An All-Sky Search for the Brightest Metal-poor Stars (South)	118.60 HR
4	GS-2017B-Q-85	Silva	GS	GMOS-S	Period determination of polars	42.00 HR
4	GS-2017B-Q-86	Weidmann	AR	GMOS-S	Searching for white dwarfs in planetary nebulae	9.20 HR
4	GS-2017B-Q-87	Schirmer	GS	F-2	Confirming a low mass group merger of the fossil group J0454-0309	16.00 HR
4	GS-2017B-Q-88	Britt	US	F-2	Spectroscopy of a new X-ray Transient and Black Hole Candidate	1.25 HR
4	GS-2017B-Q-89	Schirmer	US	GMOS-S	Verification of the Single-Band Photometric Reverberation Mapping Method	27.50 HR
4	GS-2017B-Q-90	Hernandez Padilla	CL	GMOS-S	Towards solving the SN Ia progenitor problem	158.00 HR
4	GS-2017B-Q-106	Macintosh	US	GPI	Optimizing the GPI Exoplanet Survey	50.00 HR
DIRECTOR'S DISCRETIONARY TIME						
1	GS-2017B-DD-1	Singer	DD	F-2, GMOS-S	Hunt for near-infrared photons from an exceptional LIGO/Virgo event	10.00 HR
1	GS-2017B-DD-2	Andersen	DD	F-2	Spatially resolving a rare low-mass brown dwarf binary candidate	.50 HR
1	GS-2017B-DD-3	Troja	DD	F-2, GMOS-S	Characterizing the exceptional optical/IR counterpart of GRB170817A	8.50 HR
1	GS-2017B-DD-4	Chornock	DD	F-2	Continued Gemini-South observations of the counterpart to short GRB 170817A	8.50 HR
1	GS-2017B-DD-5	Smith	DD	GMOS-N, GMOS-S	Strong-lensing Galaxy Clusters	5.20 HR

1	GS-2017B-DD-6	Singer	DD	F-2, GMOS-S	Completing the light curve of an exceptional transient associated with a LIGO/Virgo event	9.75 HR
1	GS-2017B-DD-7	Meech	DD	GMOS-N, GMOS-S	Interstellar Interloper	3.50 HR
1	GS-2017B-DD-8	Guzik	DD	GMOS-N, GMOS-S	First Interstellar Comet in Solar System	9.70 HR
1	GS-2017B-DD-9	Chornock	DD	F-2	Late-time NIR Template Observations of GW170817	2.80 HR
1	GS-2017B-DD-10	Balogh	DD	GMOS-N, GMOS-S	Completion of highest priority GOGREEN clusters	10.60 HR

D.3 2018A Science Programs - Gemini North

Band	Gemini ID	PI Name	Partners	Instrument	Title	Time
CLASSICAL						
C	GN-2018A-C-1	Fan	US	GMOS-N	Probing Cosmic Reionization and Super-Massive Black Hole Growth with Newly Discovered z>6.5 Quasars	2.00 NIGHT
LARGE PROGRAMS						
1	GN-2018A-LP-4	Balogh	LP	GMOS-N	The GOGREEN Survey of dense galaxy environments at 1<z<1.5	54.34 HR
1	GN-2018A-LP-11	Hsieh	LP	GMOS-N	Observational Characterization of Active Main-Belt Comets and Main-Belt Comet Nuclei	4.22 HR
1	GN-2018A-LP-13	Garnavich	LP	GMOS-N	The K2 Supernova Experiment - Campaigns 16 and 17	31.69 HR
1	GN-2018A-LP-14	Garnavich	LP	GMOS-N	The K2 Supernova Experiment - Campaigns 16 and 17	31.46 HR
2	GN-2018A-LP-15	Stanford	LP	GMOS-N	MaDCoWS: The Massive and Distant Clusters of WISE Survey	35.62 HR
2	GN-2018A-LP-16	Shemmer	LP	GNIRS	Placing High-Redshift Quasars in Perspective: a Gemini Near-Infrared Spectroscopic Survey	58.95 HR
FAST TURNAROUND						
1	GN-2018A-FT-101	Ebeling	UH	GMOS-N	The most distant ROSAT All-Sky Survey cluster: a powerful gravitational lens at z=0.9?	1.50 HR
1	GN-2018A-FT-102	Yang	US	GNIRS	GNIRS Observations of Two Newly Discovered z>6.7 Quasars	10.00 HR
1	GN-2018A-FT-103	Wisniewski	US	NIRI	Diagnosing New Ultra-Cool Brown Dwarf Candidates	3.90 HR
1	GN-2018A-FT-104	Rho	US	GNIRS	Continued Monitoring of Carbon Monoxide and Dust Emission in SN2017eaw	1.70 HR
1	GN-2018A-FT-105	Corlies	US	NIRI	Investigating seasonal changes in Titan's meteorology through cloud monitoring with NIRI	3.80 HR
1	GN-2018A-FT-106	Carson	US	NIRI	Testing the existence of the first bona-fide imaged circumbinary planets	1.40 HR
1	GN-2018A-FT-107	Hayashi	JP	GMOS-N	Revealing a complete view of the CL1604 supercluster at z~0.9	6.30 HR
1	GN-2018A-FT-108	Tinyanont	US	GNIRS,NIRI	Circumstellar dust around the chameleon supernova 2014C	3.00 HR
1	GN-2018A-FT-109	Nicholl	US	GMOS-N	Nebular spectroscopy of the closest and most metal-rich superluminous supernova	1.80 HR
1	GN-2018A-FT-110	Benecchi	US	NIRI, NIRILGS	Confirmation of the discovery of a moon around 2015 RR245	2.00 HR
1	GN-2018A-FT-111	Geballe	US	GNIRS	Characterising the chromosphere of the merger candidate KIC9832227	.60 HR
1	GN-2018A-FT-112	Matsuoka	JP	GNIRS	Near-IR spectroscopy of a newly discovered, extremely distant quasar at z > 7	4.00 HR
1	GN-2018A-FT-113	Simunovic	US	GMOS-N	Radial velocity confirmation of a Blue Straggler star formed through binary mass-transfer in NGC 5466	2.40 HR
1	GN-2018A-FT-114	Wang	US	GNIRS	GNIRS Followup of A Newly Discovered z=7 Quasar	4.70 HR

1	GN-2018A-FT-115	Ueta	US	GMOS-N	Comprehensive Panchromatic Analysis of Galactic Planetary Nebulae with GMOS Slit-Scan Spectra	4.40 HR
2	GN-2018A-FT-201	Leiva	US	GMOS-N	Improving astrometry of faint TNOs for stellar occultations	4.00 HR
2	GN-2018A-FT-202	Simunovic	US	GMOS-N	Spectral Characterization of Blue Straggler-White Dwarf binaries: A search for chemical signatures of mass-transfer	1.90 HR
2	GN-2018A-FT-203	Esplin	US	GNIRS	Searching for planetary-mass brown dwarfs in Taurus	2.70 HR
2	GN-2018A-FT-204	Burdge	US	GMOS-N	1705aj: A 20 Minute Double Degenerate Binary System	2.00 HR
2	GN-2018A-FT-205	Nicholl	US	GMOS-N	Very late-time spectra of one of the most luminous interacting supernovae ever discovered	2.00 HR
2	GN-2018A-FT-206	Geballe	US	GNIRS	Understanding the geometry and kinematics of the complex environs of a Class I protostar: NGC2071 IRS1	2.90 HR
2	GN-2018A-FT-207	Hill	CA	GMOS-N	Spectroscopic redshift of the lens galaxy of one of the brightest high-z sources on the sub-mm sky	3.60 HR
2	GN-2018A-FT-208	Simmons	US	GMOS-N	Unveiling the large nuclear disk in PGC 045903 with GMOS	3.80 HR
2	GN-2018A-FT-209	Leggett	US	GMOS-N,NIRI	The Physical Properties of White Dwarfs: Completing a Dataset	2.50 HR
2	GN-2018A-FT-210	Garofali	US	GMOS-N	Spectra of a Candidate Wolf-Rayet X-ray Binary in M33	1.00 HR
2	GN-2018A-FT-211	Jofrv©	AR	GMOS-N	Searching for the chemical signature of planet formation in planet-hosting binary systems	.80 HR
2	GN-2018A-FT-212	Gomez	US	GMOS-N	Nebular Phase Spectrum of a Peculiar Type Ic Supernova	1.23 HR
2	GN-2018A-FT-213	Kangas	US	GMOS-N	Completing the z < 0.5 LGRB Host Metallicity Sample	7.00 HR
QUEUE, BANDS 1-3						
1	GN-2018A-Q-101	Yang	KR	GMOS-N	What Stops Galactic Star Formation in Gas-Rich Post-Starburst Galaxies? (North)	11.99 HR
1	GN-2018A-Q-102	Woo	KR	GMOS-N	The shortest reverberation lag of NGC 4395 and testing the size-luminosity relation.	22.75 HR
1	GN-2018A-Q-103	Treu	US	GMOS-N	A reverberation mapping black hole mass measurement at z=2.82	8.00 HR
1	GN-2018A-Q-104	Tominaga	SUBARU	GMOS-N	Populations of Shock Breakouts: Variety of SN Progenitors and CSM Structure	9.37 HR
1	GN-2018A-Q-105	Takami	SUBARU	NIFS	Understanding the Mechanism of Jet Launching in Active Young Stars	5.63 HR
1	GN-2018A-Q-106	Storchi-Bergmann	BR	NIFS	NIFS survey of feeding and feedback processes in nearby Active Galaxies	10.00 HR
1	GN-2018A-Q-107	Singer	US	GMOS-N,GNIRS,NIRI	Hunt for an Infrared Counterpart to a Neutron Star Merger (North)	4.73 HR
1	GN-2018A-Q-108	Orton	US	NIRI	High-Resolution Mapping of Jupiter's Clouds in the Near Infrared: Support for the Juno Mission PJ11-PJ14	4.50 HR
1	GN-2018A-Q-109	Meech	UH	GMOS-N	The Manx Comets ? Testing Solar System Formation Models	8.50 HR
1	GN-2018A-Q-110	Meech	UH	GMOS-N	The Manx Comets ? Testing Solar System Formation Models	2.40 HR
1	GN-2018A-Q-111	Marsan	CA	GMOS-N	Hunting the First Monsters: GMOS Spectroscopy of Very Massive Galaxies at z>5	9.40 HR
1	GN-2018A-Q-112	Marinello	BR	NIFS	Blowing in the Wind: 2D Mapping of the HeI*10830 Ang. outflow in AGN	14.20 HR
1	GN-2018A-Q-113	Magnier	UH	GNIRS	Ultracool Subdwarfs from the Hyper Suprime-Cam Subaru Strategic Program	11.50 HR
1	GN-2018A-Q-114	Luo	KR	NIFS	Probing the molecular gas content and kinematics in AGNs with powerful outflows	10.00 HR
1	GN-2018A-Q-115	Liu	UH	GNIRS	Young Free-Floating Planets In the Nearest Star-Forming Regions	10.60 HR

1	GN-2018A-Q-116	Kilic	CA	GMOS-N, Graces	Double Degenerates in the Solar Neighborhood	7.20 HR
1	GN-2018A-Q-117	Kielty	CA	Graces	High resolution spectroscopy of extremely metal-poor stars from the CFHT PRISTINE Survey	9.30 HR
1	GN-2018A-Q-118	Kavelaars	CA	GMOS-N,NIRI	Colours of the Outer Solar System Origins Survey: Finishing E-block	21.40 HR
1	GN-2018A-Q-119	Johnson	US	Graces	Doppler Tomographic Observations of the Longest Period A Star Transiting Planet	5.00 HR
1	GN-2018A-Q-120	Howell	US	'Alopeke	K2 Exoplanet Candidates: Small high-value planet characterization (North)	40.00 HR
1	GN-2018A-Q-121	Fong	US	GMOS-N,NIRI	Probing the Properties of Neutron Star Mergers: Rapid Observations of Short Gamma-ray Bursts (North)	7.85 HR
1	GN-2018A-Q-122	Foley	US	GMOS-N	Ultra-Rapid UV Spectroscopy of an Interacting Supernova Discovered by K2	9.00 HR
1	GN-2018A-Q-123	Do	US	NIFS	Measuring the Relativistic Redshift of the Star S0-2 in Orbit Around the MW Supermassive Black Hole with NIFS	36.20 HR
1	GN-2018A-Q-124	de Kleer	US	NIRI	The Impact of Io's Volcanism on Jupiter's Plasma Environment	20.00 HR
1	GN-2018A-Q-125	Chambers	UH	GMOS-N	Spectroscopy of Rare Transients from Pan-STARRS	14.00 HR
1	GN-2018A-Q-126	Cauley	US	Graces	Testing the eccentric ring model for circumstellar absorption around WD1145+017	4.50 HR
1	GN-2018A-Q-127	Campuzano Castro	AR	Graces	Chemodynamics in IZw18: One of the most metal-poor known BCD galaxy.	3.20 HR
1	GN-2018A-Q-128	Burgasser	US	GMOS-N	Mass Measurements Across the Hydrogen Burning Limit: Astrometric Orbits for Spectral Binaries (Northern Sample)	11.50 HR
1	GN-2018A-Q-129	Bassino	AR	GMOS-N	Reconstructing the evolutionary history of a peculiar early-type galaxy	4.80 HR
1	GN-2018A-Q-130	Banados	US	GMOS-N, GNIRS,NIRI	The Gemini North search for the first QSOs	35.00 HR
2	GN-2018A-Q-201	Yoo	KR	GMOS-N	Constraining the ICL formation mechanism using fossil clusters at redshift 0.45	4.40 HR
2	GN-2018A-Q-202	WONG	US	NIRI	Time-Critical M-band Mapping of Jupiter --- Synergy with Juno, Hubble, VLA, Keck, and IRTF	7.00 HR
2	GN-2018A-Q-203	Winters	US	Alopeke	Searching for Companions to Nearby M Dwarfs on Solar System Scales (North)	20.00 HR
2	GN-2018A-Q-204	Tominaga	SUBARU	GMOS-N	Populations of Shock Breakouts: Variety of SN Progenitors and CSM Structure	10.63 HR
2	GN-2018A-Q-205	Shetrone	CA	Graces	High resolution spectroscopy of metal-poor stars in the Galactic bulge from the Pristine survey	13.20 HR
2	GN-2018A-Q-206	Schnorr-Müller	BR	GMOS-N	Constraining Feedback in luminous Active Galactic Nuclei at z ~ 0.3	4.40 HR
2	GN-2018A-Q-207	Schirmer	US	GMOS-N	Probing low-redshift Lyman-alpha blobs with deep 3D spectroscopy	21.80 HR
2	GN-2018A-Q-208	Sand	US	GNIRS	Constraining Type Ia Supernova Physics with Near-Infrared Spectroscopy (North)	11.23 HR
2	GN-2018A-Q-209	Ruschel-Dutra	BR	GMOS-N	Coevolution between galaxies and supermassive black holes: study on a volume limited sample (North)	7.80 HR
2	GN-2018A-Q-210	Rodríguez-Ardila	BR	GNIRS	Energetic outflows in Active Galactic Nuclei mapped from coronal lines	5.50 HR
2	GN-2018A-Q-211	Roberts	CA	GMOS-N	Mapping central emission in cool-core groups	14.90 HR
2	GN-2018A-Q-212	Pichel	AR	GMOS-N	Looking for the hidden redshift of H1722+119	2.50 HR
2	GN-2018A-Q-213	Meech	UH	NIRI	The Manx Comets ? Testing Solar System Formation Models	9.10 HR
2	GN-2018A-Q-214	Meech	UH	NIRI	The Manx Comets ? Testing Solar System Formation Models	2.50 HR

2	GN-2018A-Q-215	McKay	US	Graces	Understanding Cometary Activity at Large Heliocentric Distance with GRACES Observations of [OI]	17.60 HR
2	GN-2018A-Q-216	Magnier	UH	GNIRS	Ultracool Subdwarfs from the Hyper Suprime-Cam Subaru Strategic Program	2.00 HR
2	GN-2018A-Q-217	Ly	US	GNIRS	Recalibrating Strong-line Metallicity Diagnostics for z>1 Chemical Enrichment Studies, with T_e-based Metallicities from MACT and DEEP2	15.00 HR
2	GN-2018A-Q-218	Luhman	US	GNIRS	Toward a Complete Census of Brown Dwarfs in Upper Sco	42.40 HR
2	GN-2018A-Q-219	Liu	UH	GNIRS	Young Free-Floating Planets In the Nearest Star-Forming Regions	6.00 HR
2	GN-2018A-Q-220	Leggett	US	NIRI	Four-Micron Imaging of Two Cool Binary Systems	1.65 HR
2	GN-2018A-Q-221	Kim	KR	GNIRS	Transient Energetic Auroral Precipitation as the Origin of Jupiter's 8-micron North Polar Hotspot	5.63 HR
2	GN-2018A-Q-222	Kim	KR	GMOS-N	Binary SMBH candidates observation with GMOS IFU	5.40 HR
2	GN-2018A-Q-223	Kavelaars	CA	GMOS-N,NIRI	Colours of the Outer Solar System Origins Survey: Finishing E-block	15.20 HR
2	GN-2018A-Q-224	Irwin	US	GMOS-N	A New Type of Explosive Highly Energetic X-ray Flaring Source	9.90 HR
2	GN-2018A-Q-225	Hyun	KR	GMOS-N	Multi object spectroscopy for actively star-forming galaxy clusters at z ~ 1 with GMOS-N	4.40 HR
2	GN-2018A-Q-226	Green	US	GMOS-N	Changing-Look Quasars: Radical Changes in Accretion Rate?	5.20 HR
2	GN-2018A-Q-227	Green	US	GMOS-N	Changing-Look Quasars: Radical Changes in Accretion Rate?	5.20 HR
2	GN-2018A-Q-228	González	AR	GMOS-N	The stellar population content of Pegasus I	5.80 HR
2	GN-2018A-Q-229	Glikman	UH	GNIRS	Dust-reddened Quasars as Probes of Feedback and Galaxy Evolution	20.00 HR
2	GN-2018A-Q-230	Galbany	US	GMOS-N	Spectroscopic confirmation of high-redshift superluminous supernovae	9.90 HR
2	GN-2018A-Q-231	Couto	BR	GMOS-N	Investigating the ionized phase gas in radio loud AGNs presenting HI gas outflows	6.60 HR
2	GN-2018A-Q-232	Chambers	UH	GMOS-N	Spectroscopy of Rare Transients from Pan-STARRS	8.00 HR
2	GN-2018A-Q-233	Cenko	US	GMOS-N	Multi-Wavelength Spectroscopy of Tidal Disruption Flares: A Legacy Sample for the LSST Era	7.00 HR
2	GN-2018A-Q-234	Bowen	US	GMOS-N	The Baryon Reservoirs in Ultra Diffuse Galaxies (UDGs)	3.60 HR
3	GN-2018A-Q-301	Yana Galarza	BR	Graces	The influence of metallicity on the formation of rocky planets	4.90 HR
3	GN-2018A-Q-302	Winkler	US	GMOS-N	Assessing the Rich Supernova Remnant Population in M51	18.10 HR
3	GN-2018A-Q-303	Tannock	CA	GNIRS	Brown Dwarfs Viewed Equator-on: Seeking the Best Hosts for Biosignature Detection in Transiting Exoplanets (North)	22.00 HR
3	GN-2018A-Q-304	Takir	US	GNIRS	Searching for Volatiles and Organics in the Outer Main Asteroid Belt	25.00 HR
3	GN-2018A-Q-305	Shetrone	US	Graces	High resolution spectroscopy of metal-poor stars in the Galactic bulge from the Pristine survey	4.40 HR
3	GN-2018A-Q-306	Schirmer	US	NIRI	Thermal echoes from the fading AGN in low-redshift Lyman-alpha blobs	31.50 HR
3	GN-2018A-Q-307	Saker	AR	GMOS-N	Gaseous disks in white dwarfs	3.10 HR
3	GN-2018A-Q-308	Romero	J:US/BR	GMOS-N	Spectroscopy of massive DB white dwarf stars	1.80 HR
3	GN-2018A-Q-309	Roe	UH	GMOS-N	UH Dummy Band 3 conditions - Better Conditions	16.00 HR
3	GN-2018A-Q-310	Roe	UH	GMOS-N	UH Dummy Band 3 conditions - Worse Conditions	16.00 HR
3	GN-2018A-Q-311	Ragozzine	US	NIRI	Identifying Important New Family Members of the Dwarf Planet Haumea	2.60 HR
3	GN-2018A-Q-312	Miles-Páez	J:CA/US	GNIRS	Identifying the ultra-cool dwarfs with the most favorable geometry to search for Earth-sized planets. (North)	4.20 HR

3	GN-2018A-Q-313	Krafton	US	GMOS-N	Observations of CCSNe to Look for Dust Production (North)	13.53 HR
3	GN-2018A-Q-314	Kolobow	US	GMOS-N	Dwarf Hosts of Low-z Supernovae	2.30 HR
3	GN-2018A-Q-315	Kim	KR	GMOS-N	Spectroscopic identification of faint quasars at z~5 to understand the cosmic re-ionization (North)	2.68 HR
3	GN-2018A-Q-316	Kilic	US	GMOS-N,Graces	Double Degenerates in the Solar Neighborhood	7.10 HR
3	GN-2018A-Q-317	Kilic	US	GMOS-N	A Detached, Eclipsing 40 Min Period Double White Dwarf Binary	8.30 HR
3	GN-2018A-Q-318	Jha	US	GMOS-N	Spectroscopy of Type Iax Supernovae (North)	4.79 HR
3	GN-2018A-Q-319	Galbany	US	GMOS-N	Nebular spectroscopy of SN 2017dio, a stripped-envelope supernova interacting with H-rich circumstellar medium: constraining the progenitor and mass loss history of a rare cosmic event	1.10 HR
3	GN-2018A-Q-320	Ferrero	AR	GNIRS	A High Resolution Near Infrared Spectral Atlas of O stars with Gemini	5.10 HR
3	GN-2018A-Q-321	Cruz	BR	Graces	Short-period eclipsing binaries and the inflated radii of low-mass stars.	4.90 HR
3	GN-2018A-Q-322	Crawford	US	NIRI	J and H Photometry of Ultracool White Dwarfs	15.80 HR
3	GN-2018A-Q-323	Couto	BR	GMOS-N	Investigating the ionized phase gas in radio loud AGNs presenting HI gas outflows	6.60 HR
3	GN-2018A-Q-324	Courteau	CA	GMOS-N	Resolving Bimodalities and Fundamental Trends in Virgo Cluster Galaxies (North)	8.00 HR
3	GN-2018A-Q-325	Batiste	US	GMOS-N	Improving Bulge Stellar Velocity Dispersion Estimates for Calibration of the Mbh-sigma* Relation for AGN	22.00 HR
3	GN-2018A-Q-326	Albert	CA	GNIRS	Spectroscopy of Taurus Star Fomring Region Candidates Down to 3 Jupiter Masses	14.50 HR
QUEUE, BAND 4 (POOR WEATHER)						
4	GN-2018A-Q-401	Margheim	GS	GMOS-N	SN2018oh: A bright K2 Supernova	0.00 HR
4	GN-2018A-Q-402	ChenV©	GS	GMOS-N	Second spectrum for Kojima event	1.00 HR
4	GN-2018A-Q-403	Schlaufman	GS	GMOS-N, GMOS-S	An All-Sky Search for the Brightest Metal-poor Stars	89.10 HR
4	GN-2018A-Q-404	Sarajedini	GS	GMOS-N	Variability Studies of the Brightest AGN in MACSJ1149	.20 HR
4	GN-2018A-Q-405	White	GS	NIRI	AO Imaging of Interferometric Calibrators: Improving the Size Measurement of AU Mic	.90 HR
4	GN-2018A-Q-406	Arias	AR	GNIRS	Unveiling the binary nature of the B[e] star MWC 645	1.40 HR
DIRECTOR'S DISCRETIONARY TIME						
1	GN-2018A-DD-1	Thomas	DD	GMOS-N	Kinematic confirmation of the existence of a faint distant stellar stream	1.80 HR
1	GN-2018A-DD-102	Ono	DD	GMOS-N	Spectroscopic confirmation of the most distant galaxy cluster at the epoch of reionization z=6.57	3.60 HR
1	GN-2018A-DD-103	Wang	DD	GNIRS	A Twenty Billion Solar Mass Black Hole Hosted by A Young Quasar at Cosmic Dawn?	1.30 HR
1	GN-2018A-DD-104	Dupuy	DD	GNIRS	Confirming a Parallax-Discovered Wide Ultracool Companion	3.50 HR
1	GN-2018A-DD-105	Desrochers	DD	GNIRS	Potential interacting binary: radial velocity follow-up of a T6.5 brown dwarf with distinctive HŒ± emission	1.60 HR
1	GN-2018A-DD-106	Kavelaars	DD	GMOS-N	Tracking the New Horizons target 2011 JW31	1.00 HR
1	GN-2018A-DD-107	Kelly	DD	GMOS-N	A Bright Microlensing Event of a Highly Magnified Blue Supergiant Star at Redshift z=1.5	5.00 HR
1	GN-2018A-DD-108	Bailey	DD	HIPPI-2	HIPPI-2 Commissioning	20.00 HR
1	GN-2018A-DD-109	Geballe	DD	NIRI	Photometry of Dust and Carbon Monoxide Emission in SN 2017eaw	2.90 HR
1	GN-2018A-DD-110	Benecchi	DD	'Alopeke	The Light Curves of Pluto and Charon at True Opposition	5.00 HR

1	GN-2018A-DD-111	Schindler	DD	'Alopeke	Support for SOFIA: Mitigate Mission Risk due to Stellar Duplicity of Occultation Target Star	.50 HR
1	GN-2018A-DD-112	Kelley	DD	GNIRS	Aftermath of an outburst at comet 129P/Shoemaker-Levy 3	1.60 HR
2	GN-2018A-DD-201	Schwamb	DD	GMOS-N	Gemini Legacy Image of an AGN-ionized gas cloud	3.0 R

D.4 2018A Science Programs – Gemini South

Band	Gemini ID	PI Name	Partners	Instrument	Title	Time
CLASSICAL						
C	GS-2018A-C-1	Eikenberry	US	F-2	The Source of Extreme IR Variability in a Galactic Center X-ray Binary	0.50 NIGHT
C	GS-2018A-C-2	Eikenberry	US	F-2	FLAMINGOS-2 Spectroscopy with VLTI Observations of SS 433	0.20 NIGHT
LARGE PROGRAMS						
1	GS-2018A-LP-1	Balogh	LP	GMOS-S	The GOGREEN Survey of dense galaxy environments at 1<z<1.5	8.60 HR
1	GS-2018A-LP-2	Fritz	LP	GMOS-S,GSAOI	XProbing the dark halo of the Milky Way with GeMS/GSAOI	40.00 HR
2	GS-2018A-LP-6	Chen	LP	GPI	Characterizing Dusty Debris in Exoplanetary Systems	20.80 HR
1	GS-2018A-LP-11	Hsieh	LP	GMOS-S	Observational Characterization of Active Main-Belt Comets and Main-Belt Comet Nuclei	2.30 HR
1	GS-2018A-LP-12	Monnier	LP	GPI	Scattered Light imaging of YSOs: Probing the Fundamental Stages of Planet Formation	21.00 HR
1	GS-2018A-LP-17	Mace	LP	IGRINS	Young Star & Protoplanetary Disk Evolution with High-Resolution IR Spectroscopy	135.00 HR
FAST TURNAROUND						
1	GS-2018A-FT-101	Metchev	CA	GPI	An observational test of gravitational instability for forming multiple massive substellar companions	3.30 HR
1	GS-2018A-FT-102	Taylor	US	GMOS-S	Dancing in the Dark: GMOS Imaging of a Nearby Dwarf Galaxy Pair	4.00 HR
1	GS-2018A-FT-103	Pacheco	BR	GPI	Towards improved stellar ages for binary field stars using white dwarfs	4.00 HR
1	GS-2018A-FT-104	Skillman	US	GMOS-S	Pox 186: An Extreme Lyman Continuum Leaker?	2.00 HR
1	GS-2018A-FT-105	Maeda	JP	F-2	Confirmation of CCSN candidate AT 2017chi with F2	1.40 HR
1	GS-2018A-FT-106	Donzelli	AR	GMOS-S	First confirmation of an Halpha cloud responsible for intra-day radio variability	1.80 HR
1	GS-2018A-FT-107	Lee	JP	F-2	Transmission spectroscopy of the super Earth GJ 1132b	3.00 HR
1	GS-2018A-FT-108	Taylor	US	GMOS-S	The Need for Speeds: A pilot study to map the velocity field of NGC5128 with ultra-compact dwarf galaxies	7.48 HR
1	GS-2018A-FT-109	Hillwig	US	GMOS-S	Characterizing a Close Double Degenerate Binary Just Out of the Common Envelope Phase	2.70 HR
1	GS-2018A-FT-110	Fong	US	F-2	Confirming a Distant Short Gamma-ray Burst with Gemini Near-Infrared Spectroscopy	1.80 HR
1	GS-2018A-FT-111	Metchev	CA	GPI	Characterizing a rare planetary-like system with a low-mass stellar companion inside a circumstellar debris disk	2.80 HR
1	GS-2018A-FT-112	Hunt	US	GMOS-S	Investigating the Quenching of a Massive, Gas-Rich z~0.6 Galaxy with Extended Molecular Gas and Strong Ionized Gas Emissions	3.90 HR
1	GS-2018A-FT-113	Cartier	US	F-2,GMOS-S	Constraining the explosion mechanism of nearby Type Ia SNe using nebular-phase observations	10.60 HR
2	GS-2018A-FT-201	Cartier	US	F-2,GMOS-S	Constraining the explosion mechanism of the nearby Type Ia SN 2017cbv using nebular-phase observations	4.20 HR
2	GS-2018A-FT-202	Gallagher	US	GMOS-S	Dispersed Stellar Populations in Tidal Tails	6.60 HR
2	GS-2018A-FT-203	Burdge	US	GMOS-S	PTFS1705aj: A 20 Minute Double Degenerate Binary System	4.50 HR

2	GS-2018A-FT-204	Salinas	US	GMOS-S	A puzzling young star cluster in the LMC outskirts	2.20 HR
2	GS-2018A-FT-205	Bosh	US	DSSI	Stellar duplicity search for Orcus stellar occultation target	.90 HR
2	GS-2018A-FT-206	Leggett	US	GMOS-S	The Physical Properties of White Dwarfs: Completing a Dataset	1.50 HR
2	GS-2018A-FT-207	Holler	US	F-2	Spectra of the high-albedo Kuiper Belt Object (471143) 2010 EK139	5.30 HR
2	GS-2018A-FT-208	Sesto	AR	GMOS-S	Multi-component decomposition of the light distribution of NGC 5018	.30 HR
2	GS-2018A-FT-209	Chenv©	US	F-2,GNIRS	A super star cluster candidate on the opposite side of the Milky Way	3.00 HR
2	GS-2018A-FT-210	Medezinski	US	GMOS-S	Unveiling the Most Distant Massive Cluster Merger	3.00 HR
2	GS-2018A-FT-211	Goncalves	BR	GMOS-S	Confirming the most massive galaxies at z~4	2.40 HR
QUEUE, BANDS 1-3						
1	GS-2018A-Q-101	Yang	KR	GMOS-S	What Stops Galactic Star Formation in Gas-Rich Post-Starburst Galaxies? (South)	11.99 HR
1	GS-2018A-Q-102	Vigeland	BR	GMOS-S	PSR J1640+2224: A challenge to binary evolution models	3.80 HR
1	GS-2018A-Q-103	Tappert	CL	GMOS-S	The evolution of nova shells	9.80 HR
1	GS-2018A-Q-104	Steiner	BR	GMOS-S	LLP - The Gemini Survey of Galactic Nuclei - GSGN	8.10 HR
1	GS-2018A-Q-105	Singer	US	F-2,GMOS-S	Hunt for an Infrared Counterpart to a Neutron Star Merger (South)	5.17 HR
1	GS-2018A-Q-106	Shen	US	GMOS-S	GMOS Spectrocopy of Candidate Changing-Look Quasars	16.40 HR
1	GS-2018A-Q-107	Sand	US	F-2	Constraining Type Ia Supernova Physics with Near-Infrared Spectroscopy (South)	15.97 HR
1	GS-2018A-Q-108	Ravindranath	US	GMOS-S	Semi-forbidden CIII]1909 Emission in the Rest-frame UV Spectra of Extreme Emission Line Galaxies	8.80 HR
1	GS-2018A-Q-109	Rameau	CA	GPI	The near-infrared spectrum of the young planet HIP65426 b	8.20 HR
1	GS-2018A-Q-110	Puzia	CL	GSAOI	The GeMS/GSAOI Galactic Globular Cluster Survey (G4CS)	3.50 HR
1	GS-2018A-Q-111	Puzia	CL	GSAOI	The Structure and Stellar Populations of the Milky Way Nuclear Star Cluster seen by GeMS/GSAOI	5.50 HR
1	GS-2018A-Q-112	Park	KR	IGRINS	High-resolution spectral observations of a periodic variable protostar, EC 53	9.92 HR
1	GS-2018A-Q-113	Oh	KR	IGRINS	High Resolution Spectroscopic Study of Bow-shock with Extremly High-velocity H_2 Emission	8.50 HR
1	GS-2018A-Q-114	Metchev	J:CL/CA	IGRINS	Habitable Super-Earths around the Nearest Pair of Brown Dwarfs	19.10 HR
1	GS-2018A-Q-115	Mauro	J:CL/AR	GSAOI	Age-dating past multiple bursts of star formation in Terzan 5, a fossil relic of the Galactic bulge	1.60 HR
1	GS-2018A-Q-116	Maeda	SUBARU	GMOS-S	Studying Final Evolution of Massive Stars by Gemini and ALMA/ATCA/GMRT	10.00 HR
1	GS-2018A-Q-117	Lee	KR	GMOS-S	Spectroscopic follow-up of infant supernovae and rare transients discovered by the KMTNet Supernova Search	3.30 HR
1	GS-2018A-Q-118	Kraus	US	IGRINS	The Mass-Radius Relation at 10 Myr from K2	25.60 HR
1	GS-2018A-Q-119	Kilpatrick	US	GSAOI	Identifying the Progenitors of Astrophysical Transients	2.70 HR
1	GS-2018A-Q-120	Kerber	BR	GSAOI	Accurate ages of fossil bulge globular clusters from deep NIR photometry	12.00 HR
1	GS-2018A-Q-121	Howell	US	DSSI	K2 Exoplanet Candidates: Small high-value planet characterization (South)	40.00 HR
1	GS-2018A-Q-122	Hinkle	US	IGRINS	Exploring the violent history of SyXB systems	9.60 HR
1	GS-2018A-Q-123	Hartigan	US	GSAOI	A Test of Triggering in Carina's Western Wall	10.00 HR
1	GS-2018A-Q-124	Han	US	IGRINS	Fundamental properties of low-mass stars: determination of a self-consistent mass-radius-luminosity relationship	16.00 HR

1	GS-2018A-Q-125	Gomez	CL	GMOS-S	The Globular Cluster - Black Hole connection in late type galaxies: NGC4945 - the missing piece in the puzzle	2.00 HR
1	GS-2018A-Q-126	Ghez	US	GSAOI	Using MCAO to Enable Unique Test of General Relativity at the Galactic Center	7.20 HR
1	GS-2018A-Q-127	Fong	US	F-2,GMOS-S	Probing the Properties of Neutron Star Mergers: Rapid Observations of Short Gamma-ray Bursts (South)	7.85 HR
1	GS-2018A-Q-128	Ennis	AR	GMOS-S	Spectroscopic analysis of the stellar content of the peculiar galaxy NGC 4753 and its globular clusters.	5.20 HR
1	GS-2018A-Q-129	Desrochers	CA	IGRINS	Title: Uncovering exoplanets from 0.01 to 100 AU: demonstration of a novel planet detection technique	6.50 HR
1	GS-2018A-Q-130	Cuadra	CL	GSAOI	Star formation and dynamics at < 2.5 pc from Sgr A*	10.00 HR
1	GS-2018A-Q-131	Cohen	CL	GSAOI	Unveiling the Heart of the Milky Way: Ages and Structural Parameters of Inner Galactic Bulge Globular Clusters	6.70 HR
1	GS-2018A-Q-132	Chornock	US	F-2	Late-time NIR Template Observations of the Extraordinary GRB 170817A	3.10 HR
1	GS-2018A-Q-133	Burgasser	US	GMOS-S	Mass Measurements Across the Hydrogen Burning Limit: Astrometric Orbits for Spectral Binaries	11.30 HR
1	GS-2018A-Q-134	Blakeslee	CA	GSAOI	Stellar Population GeMology: Long Period Variables at High Metallicity in the Nearest Elliptical Galaxy	2.00 HR
1	GS-2018A-Q-135	Belikov	CA	GPI	Direct imaging of exoplanets and exozodiacal dust around Alpha Centauri A and B	6.20 HR
1	GS-2018A-Q-136	Andersen	US	GSAOI	Probing the depths of a massive cluster in the making	4.00 HR
1	GS-2018A-Q-137	Afsariardchi	CA	GMOS-S	Spectroscopy of Infant Supernova and Rapid Transients Discovered by the KMTNet Supernova Project	11.10 HR
2	GS-2018A-Q-201	Yuk	KR	IGRINS	Probing Colliding Winds and Disk Accretion in VV CrA Binary System	1.20 HR
2	GS-2018A-Q-202	Winters	US	DSSI	Searching for Companions to Nearby M Dwarfs on Solar System Scales (South)	20.00 HR
2	GS-2018A-Q-203	Vieira	CA	F-2,GMOS-S	Optical followup of the SPT2052-55 protocluster at z=4.3	5.10 HR
2	GS-2018A-Q-204	Tomsick	US	F-2	Constraing the Milky Way's Faint HMXBs Population	2.30 HR
2	GS-2018A-Q-205	Tejos	CL	GMOS-S	Rapid Imaging and Spectroscopic Follow-up of Fast Radio Bursts	5.00 HR
2	GS-2018A-Q-206	Taylor	CL	GMOS-S	Dancing in the Dark: GMOS-S imaging of a potential dwarf binary pair.	2.20 HR
2	GS-2018A-Q-207	Sesto	AR	GMOS-S	The evolutionary history of NGC 5018	4.20 HR
2	GS-2018A-Q-208	Ruschel-Dutra	BR	GMOS-S	Coevolution between galaxies and supermassive black holes: study on a volume limited sample (South)	3.00 HR
2	GS-2018A-Q-209	Rodriguez	CL	F-2,GMOS-S	Expanding the near-infrared Hubble Diagram up to z=0.1	5.00 HR
2	GS-2018A-Q-210	Reiter	US	GSAOI	Connecting refractory grains in jets with their dusty source	25.50 HR
2	GS-2018A-Q-211	Pelisoli	BR	GMOS-S	Where are the cool extremely-low mass white dwarfs?	6.20 HR
2	GS-2018A-Q-212	Papovich	US	F-2	ZFK2: The First Systematic Exploration of the K-band Window and a Census of Massive Galaxies at 4 < z < 6	15.50 HR
2	GS-2018A-Q-213	Papovich	CA	F-2	ZFK2: The First Systematic Exploration of the K-band Window and a Census of Massive Galaxies at 4 < z < 6	15.50 HR
2	GS-2018A-Q-214	Nielsen	US	GPI	Orbits of Moving Group Binaries: Constraining the Ages of Planet-Hosting Moving Groups using GPI NRM Astrometry and IGRINS Radial Velocities	10.46 HR
2	GS-2018A-Q-215	Masiero	US	GMOS-S	Time-critical followup of deep-south newly discovered NEOWISE near-Earth objects	4.00 HR
2	GS-2018A-Q-216	Lowenthal	US	GMOS-S	Gravitational Lens Models for the Brightest Planck SMGs at 1<z<4	10.50 HR
2	GS-2018A-Q-217	Lee	KR	IGRINS	IGRINS Survey of Galactic Post-AGB Stars	12.60 HR

2	GS-2018A-Q-218	Lacy	US	IGRINS	Absorption by H2, CO, and Dust Through Cold Molecular Clouds	20.00 HR
2	GS-2018A-Q-219	Krabbe	BR	GMOS-S	Isolated groups of extremely blue dwarf galaxies	8.50 HR
2	GS-2018A-Q-220	Kim	KR	GMOS-S	Spectroscopic identification of faint quasars at z~5 to understand the cosmic re-ionization (South)	5.24 HR
2	GS-2018A-Q-221	Johns-Krull	US	IGRINS	Magnetic Field Evolution During the Pre-Main Sequence	7.20 HR
2	GS-2018A-Q-222	Homan	US	F-2	Winds and jets in GX13+1: a multi-wavelength campaign	4.00 HR
2	GS-2018A-Q-223	Gonzalez	CL	F-2	The Dawn of Quiescent Galaxies	10.00 HR
2	GS-2018A-Q-224	Gonzalez	CL	GMOS-S	Testing the break down of the Main Sequence of Star Forming Galaxies	12.00 HR
2	GS-2018A-Q-225	Dahmer Hahn	BR	GMOS-S	GMOS+NIFS survey of feeding and feedback processes in nearby Active Galaxies	3.50 HR
2	GS-2018A-Q-226	Cidale	BR	GMOS-S	Unveiling the extreme stellar content of Local Group galaxies	3.30 HR
2	GS-2018A-Q-227	Cellone	J:CL/AR	GMOS-S	Looking deeper into exo-atmospheres: A complete study on the bloated WASP-74b relying on GEMINI/GMOS	6.00 HR
2	GS-2018A-Q-228	Cartier	US	F-2	Observations of the Type Ia-CSM SN 2016iks beyond 500 d: witnessing the fade of the circumstellar interaction (South)	6.67 HR
2	GS-2018A-Q-229	Blakeslee	US	GSAOI	Stellar Population GeMology: Long Period Variables at High Metallicity in the Nearest Elliptical Galaxy	5.00 HR
2	GS-2018A-Q-230	Beamin	CL	GSAOI	Trigonometric parallax of the ancient T dwarf WISE0833+0052	2.50 HR
2	GS-2018A-Q-231	Arias	AR	IGRINS	Molecular emission bands in the symbiotic star BI Crucis	0.50 HR
3	GS-2018A-Q-301	Weidmann	AR	GMOS-S	Searching for white dwarfs in planetary nebulae: spectroscopic confirmation	2.90 HR
3	GS-2018A-Q-302	Warrener	US	GMOS-S	A Search for Quiescent Stellar Mass Black Hole Binaries	14.40 HR
3	GS-2018A-Q-303	Vieira	J:US/CA	F-2,GMOS-S	Optical followup of the SPT2052-55 protocluster at z=4.3	28.30 HR
3	GS-2018A-Q-304	Tannock	CA	IGRINS	Brown Dwarfs Viewed Equator-on: Seeking the Best Hosts for Biosignature Detection in Transiting Exoplanets (South)	15.50 HR
3	GS-2018A-Q-305	Sakari	J:US/CA	IGRINS	The Nature of Sparse, Metal-Poor Globular Clusters in the Inner Region of the Milky Way	7.50 HR
3	GS-2018A-Q-306	Pelisoli	BR	GMOS-S	Where are the cool extremely-low mass white dwarfs?	16.00 HR
3	GS-2018A-Q-307	Oka	US	IGRINS	Probing the Galactic Center's Central Molecular Zone using CO	8.00 HR
3	GS-2018A-Q-308	Nielsen	US	IGRINS	Orbits of Moving Group Binaries: Constraining the Ages of Planet-Hosting Moving Groups using GPI NRM Astrometry and IGRINS Radial Velocities	10.54 HR
3	GS-2018A-Q-309	Miles-P·ez	J:CL/CA	IGRINS	Identifying the ultra-cool dwarfs with the most favorable geometry to search for Earth-sized planets. (South)	15.70 HR
3	GS-2018A-Q-310	Metchev	US	IGRINS	Habitable Super-Earths around the Nearest Pair of Brown Dwarfs	3.00 HR
3	GS-2018A-Q-311	Krafton	US	GMOS-S	Observations of CCSNe to Look for Dust Production (South)	11.27 HR
3	GS-2018A-Q-312	Kidder	US	IGRINS	Physical Properties of Confirmed TWA Members	25.20 HR
3	GS-2018A-Q-313	Kelley	US	GMOS-S	Precise orbit and distant activity of comet Hale-Bopp	2.20 HR
3	GS-2018A-Q-314	Hynes	US	GMOS-S	The Hidden Population of Galactic Bulge Symbiotics Revealed in X-rays	13.00 HR
3	GS-2018A-Q-315	Graham	US	GMOS-S	A Deeper Physical Understanding of Thermonuclear Supernovae with Nebular-Phase Spectra	29.40 HR
3	GS-2018A-Q-316	Gonzalez	CL	F-2	The Dawn of Quiescent Galaxies	14.00 HR

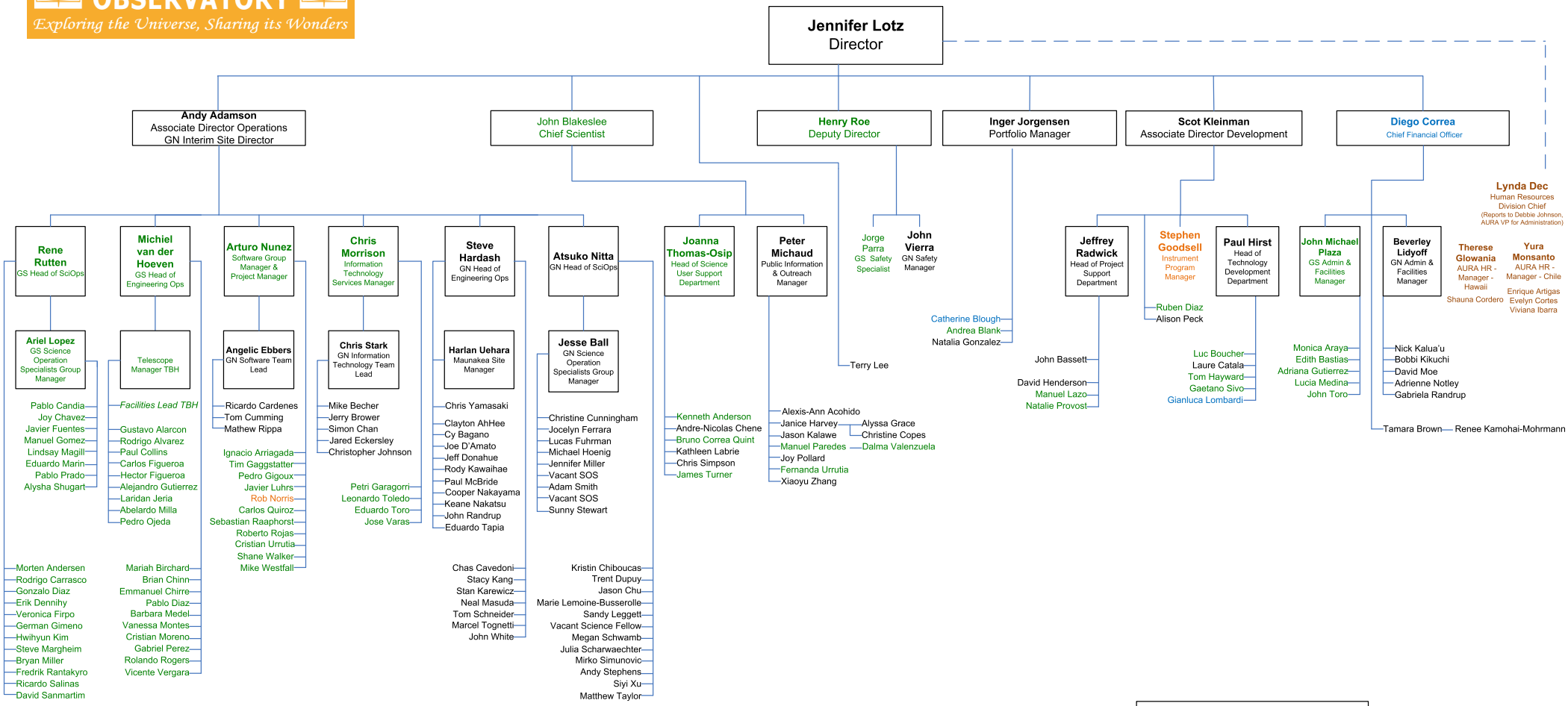
3	GS-2018A-Q-317	Gomez	CL	GMOS-S	The Globular Cluster - Black Hole connection in late type galaxies: NGC4945 - the missing piece in the puzzle	4.00 HR
3	GS-2018A-Q-318	Drahus	US	GMOS-S	Rotation of Main Belt Comets	8.00 HR
3	GS-2018A-Q-319	Dame	US	GMOS-S	Short-period Variables in the DECam Minute Cadence Survey	3.60 HR
3	GS-2018A-Q-320	Courteau	CA	GMOS-S	Resolving Bimodalities and Fundamental Trends in Virgo Cluster Galaxies (South)	15.80 HR
3	GS-2018A-Q-321	Chick	US	F-2	Characterization of Bowshock Supporting Massive Runaway Stars	18.60 HR
3	GS-2018A-Q-322	Cheng	CL	GMOS-S	Investigating local faint star forming galaxies: the bulge formation, star formation quenching and metallicity	7.00 HR
3	GS-2018A-Q-323	Baume	AR	GMOS-S	Optical study of Embedded clusters	5.50 HR
3	GS-2018A-Q-324	Arias	AR	IGRINS	Studying the kinematics of disks around Magellanic Clouds B[e] supergiants by modeling CO emission	2.20 HR
QUEUE, BAND 4 (POOR WEATHER)						
4	GS-2018A-Q-401	Arias	AR	F-2	Evolutionary state and circumstellar environment of evolved massive stars	3.80 HR
4	GS-2018A-Q-402	Placco	US	GMOS-S	Finding the brightest low-metallicity stars between the clouds	30.00 HR
4	GS-2018A-Q-403	Weidmann	AR	GMOS-S	The mystery of WRAY 15-811	1.10 HR
4	GS-2018A-Q-404	Weidmann	AR	GMOS-S	Searching for white dwarfs in planetary nebulae	9.90 HR
4	GS-2018A-Q-405	Angeloni	CL	GMOS-S	Spectroscopic follow-up of the RAMSES II Acceptance Test targets	7.00 HR
4	GS-2018A-Q-406	Schlaufman	US	GMOS-N, GMOS-S	An All-Sky Search for the Brightest Metal-poor Stars	7.90 HR
4	GS-2018A-Q-407	Shaw	CA	F-2	NIR follow-up of Galactic Bulge X-ray transients: IGR J17445-2747	1.20 HR
4	GS-2018A-Q-408	Rodruck	US	GMOS-S	Sky Flats for Diffuse Light Imaging	5.40 HR
4	GS-2018A-Q-409	Hernandez Padilla	CL	GMOS-S	Towards solving the SN Ia progenitor problem	17.00 HR
4	GS-2018A-Q-410	Sokal	US	IGRINS	IGRINS Characterization of Bright YSOs in Ophiuchus	79.00 HR
4	GS-2018A-Q-411	Mann	US	IGRINS	The Mass-Luminosity-Age Relation of Low-Mass Stars	15.00 HR
4	GS-2018A-Q-412	Strader	US	F-2	Spectroscopic confirmation of a new gamma-ray binary	1.00 HR
4	GS-2018A-Q-413	Andersen	GS	F-2	Spectral mapping of interacting supernova remnants	16.00 HR
4	GS-2018A-Q-414	Davidge	CA	F-2	The Integrated Spectrum of the Inner Galaxy	7.50 HR
4	GS-2018A-Q-415	Rivera Sandoval	US	GMOS-S	Spectroscopic identification of UV variable stars towards the Galactic Bulge	12.10 HR
4	GS-2018A-Q-416	Gaspar	AR	F-2	Dusty Active Galactic Nuclei as seen with Flamingos-2	53.80 HR
4	GS-2018A-Q-417	Sullivan	US	IGRINS	Confirming H3+ in emission in VV Corona Australis	0.30 HR
4	GS-2018A-Q-418	Oh	US	IGRINS	IGRINS survey of RSG population of young star clusters near the Scutum-Crux arm	11.20 HR
4	GS-2018A-Q-419	Endl	US	IGRINS	A pilot program looking for planets around very young stars	10.00 HR
4	GS-2018A-Q-420	Salinas	US	IGRINS	Multiple populations in the most massive Galactic intermediate-age cluster	8.70 HR
4	GS-2018A-Q-421	Hanley	US	IGRINS	Ices on Triton	2.00 HR
DIRECTOR'S DISCRETIONARY TIME						
1	GS-2018A-DD-101	Papovich	DD	F-2	A DDT Proposal to Complete a Systematic Exploration of the K-band Window and a Census of Massive Galaxies at 4 < z < 6	9.10 HR
1	GS-2018A-DD-102	Andersen	DD	F-2	N79, the Large Magellanic Cloud twin or sibling to 30 Doradus?	3.20 HR

1	GS-2018A-DD-103	Rottler	DD	F-2	First Infrared Spectrum of a Red Transient During the Early Outburst	.50 HR
1	GS-2018A-DD-104	Kavelaars	DD	GMOS-S	Tracking the New Horizons target 2011 JW31	1.00 HR
2	GS-2018A-DD-201	Bahramian	DD	F-2	Near infrared spectroscopy of a newly discovered transient X-ray binary	2.40 R

Appendix E. Organizational Chart

Next page.

Exploring the Universe, Sharing its Wonders



Legend:
Black = Gemini North Employees
Green = Gemini South Employees
Blue = Gemini Teleworkers
Bronze = AURA HR Support
Red = Long term visitors
Orange = Contractors

Gemini Observatory

Effective as of December 1, 2018

Appendix F. Staff Accomplishments

F.1 AURA Awards

No nomination for the Technology and Innovation award was submitted in 2018.

F.1.1 Science Award

Morten Andersen, assistant astronomer, in recognition of his research on the stellar content of young, massive Galactic star clusters.

Morten published two first-author papers in 2017. In the first of these, "Very Low-Mass Stellar Content of the Young Supermassive Galactic Star Cluster Westerlund 1," Morten and his colleagues use three-band, 2x2 mosaic imaging with the Infrared Channel of the Wide Field Camera 3 on the Hubble Space Telescope to study the initial mass function (IMF) of stars down to 0.15 solar masses in the most massive young Galactic star cluster known, Westerlund 1 (Wd1).

This object lies deep in the Galactic plane, and it was necessary to derive the foreground dust extinction, field star contamination, age, and distance of Wd1. After successfully dealing with each of these issues, the study detects for the first time the flattening of the IMF at low stellar masses within a dense, starburst-like environment. Based on a log-normal fit, the width of the IMF appears slightly narrower than that observed for field stars, and more similar to the width for globular clusters. The study also derives a total mass of about 50,000 solar masses, indicating that Wd1 is gravitationally bound. These results suggest that Wd1 is a young counterpart to the lower mass members of the Galactic globular cluster population. The work also has implications in a wider context for understanding the evolution of the stellar populations in massive galaxies, where currently the only constraints on the IMF come from model-dependent, and still controversial, interpretations of absorption features in the integrated stellar light.

A second paper led by Morten and published in 2017, entitled "The Stellar Content of the Infalling Molecular Clump G286.21+0.17," presents deep, multi-band, near-infrared photometry of an even younger stellar association, including pre-main-sequence stars, embedded within a massive "molecular clump." The study finds evidence for sub-clustering in the stellar distribution, with at least three distinct groupings of stars within the clump, suggesting multiple bursts of star formation. Morten and colleagues estimate a total current stellar mass of about 200 solar masses, much less than the estimated 104 solar masses in gas for the molecular clump itself. Thus, this system represents the earliest stage in the evolution of a massive star cluster. These results indicate that the evolution is complex and episodic, providing an important constraint for star cluster formation models.

With these two first-author papers published in the past year, Morten has reinforced his position as a leader in the study of the stellar content of young massive clusters. At the same time, he has continued to carry out his Observatory responsibilities, which include leading the very popular Gemini Fast Turnaround effort and serving as Project Scientist for the forthcoming SCORPIO instrument.

F.1.2 Service Award

Manuel Lazo, Project Manager/Engineer

Manuel Lazo began working with AURA over 30 years ago. He began at CTIO and moved to Gemini where he has held multiple roles, including Electronics Engineer, Systems Engineer, Head of Systems

Engineering, Head of Software and Information Technology, Project Engineer, and Project Manager. Manuel consistently serves wherever needed at Gemini with unfailingly excellence and has thus become a technical and management “go-to guy”.

2017 was a particularly momentous year for Manuel. Despite being hampered by chronic knee problems and eventual surgery, Manuel successfully led the project to replace the old adaptive optics laser at Gemini South with a new, more reliable model. This project completed on time, on scope, and on budget. Manuel left team members and stakeholders with a strong impression of his deep knowledge and control of the project. Manuel very successfully bridges Development and Operations activities and staff in both divisions actively seek to work with him on their projects. His project reports and associated documentation now serve as standards for future Observatory projects.

Manuel has adopted a very thorough systems engineering approach that starts with proper requirements flowdown and associated testing through the project. That system also serves as an example for Gemini projects; its value clearly demonstrated by the success of the laser project Manuel led and the GMOS CCD replacement projects he also led and completed successfully. These were all high-impact, high-visibility projects on high demand facilities that could not afford to have downtime post-delivery.

Manuel also provides broad expert review and support for our external instrument teams, particularly contributing to both GHOST and SCORPIO efforts this year. Manuel’s broad base of experience allows him to do a thorough technical review of projects, including mechanical, electrical, and software engineering along with project management and systems engineering approaches. Members from both external teams have expressed appreciation for Manuel’s support while internal team members at Gemini rely on Manuel to identify issues and keep the project on track.

In summary, Manuel has a track record of excellence in service; he contributes throughout the Observatory; and he regularly performs far above and beyond the minimum needed for project success.

F.1.3 Team Award

Gemini North Shutter Repair Team

This year's AURA Team Award goes to the team that designed, planned and executed the Gemini North Shutter Repair engineering work in mid-2017. The team mainly comprised members of Gemini North Engineering Operations, with additional physical and design work by Gemini South Engineering Operations, and some assistance from other Departments within Gemini.

As with most major observatories, Gemini’s telescopes rely on a large and complex mechanical system to open their dome shutters every night. The Gemini mechanism relies on a pair of continuous, stationary chains which span the arch girders and along which the shutters (top and bottom) crawl, using two “drive boxes” each - one on either side of each shutter, each containing two gearboxes.

In late 2013, Gemini North suffered the first of two mechanical failures in its dome shutter drives. This manifested itself via a broken bearing in one of the drive boxes in the upper shutter. After an emergency shutdown, this drive box was rebuilt and operations continued; however another failure in May 2014 led to suspicion that a fundamental problem - differential stretching in the drive chains - could have been responsible for at least the second failure, possibly also for the first, and would quite likely cause additional failures in the future.

The drive boxes were modified to allow them to respond more flexibly to the stretching, but in August 2016 a failure of a further drive box in the lower shutter showed that complete replacement of the chains, and refurbishment and replacement of all drive boxes, would be required if we were to return the dome system to a state capable of enduring another ~20 years of nightly operation.

To give an impression of the scale of this task, we note that removal of the drive chains requires each of the massive shutters to be pinned in place, allowing the chains to be extracted at the highest point of the dome. The team devised the method for doing this, involving the largest crane on the Island of Hawaii. Further, each drive box weighs two tons and each box needed to be removed from its shutter, lowering to the ground level and refurbishment/repair before reinstallation. The entire project was planned in an effort which involved the entire summit team, choreographing the various dome motions, shutter pinnings, crane movements, chain removal and replacement and reinstallation of the drive boxes. All team members contributed to the plan down to the finest detail, and an initial estimate of ten weeks was ultimately reduced to a final duration of seven weeks.

The Gemini Board of Directors agreed to scheduling the requested shutdown time across the 2017A-2017B semester boundary. Telescope time is of course very expensive, and seven weeks was a generous allocation. However the planned work only just fitted within the time available and the team, once July came around, was working very much against the clock. They were also working against the elevation of Maunakea, which is physically challenging at the best of times, let alone when carrying out a complex, major engineering job which has never before been attempted. Other members of the Engineering department contributed to the endeavor by being extremely flexible with their working hours, allowing shutter work and essential instrumentation maintenance to proceed concurrently.

Thanks to comprehensive planning and a truly collaborative effort, the work was completed on time, well within budget and with excellent results: the shutter has been running mechanically more smoothly than any can recall, and with drive currents significantly less than before the work was done.

Members of the Shutter team 2017:

Agustin Agno	John Randrup
Andy Adamson	John White
Chas Cavedoni	Joseph D'Amato
Chris Yamasaki	Joy Pollard
Christy Cunningham	Keane Nakatsu
Clayton Ah Hee	Marcel Tognetti
Cooper Nakayama	Neal Masuda
Cy Bagano	Pablo Diaz
Eduardo Tapia	Paul McBride
Gabriel Perez	Rody Kawaihae
Harlan Uehara	Stan Karewicz
Jeff Donahue	Steve Hardash

F.2 Invited Talks

Gonzalo Diaz

"Flamingos-2: Spectroscopy and Imaging in the Near-Infrared", at the workshop: "Gemini en Argentina: Actualidad y Prospección", La Plata, Argentina (September 17, 2018).

Inger Jørgensen

The Gemini/HST Galaxy Cluster Project - Ages, Metallicities, and Abundance Ratios of Bulge-Dominated Galaxies, Department of Astronomy, University of Concepcion, Chile (November 21, 2018).

A Journey in Time and Space, arranged by Women in Physics, University of Oregon, Eugene, Oregon, USA (April 24, 2018).

Bryan Miller

"Gemini Observatory Plans", at NOAO Community Needs for Science in the 2020s, Tucson, AZ (February 21, 2018).

"ToO Follow-up network: Gemini perspective", at Science and Evolution of Gemini Observatory, San Francisco, CA (July 24, 2018).

Siyi Xu

"Research and Service work as an Astronomer at Gemini Observatory", Invited colloquium talk at Nanjing University, China (January 4, 2018).

"Detecting Transiting Objects around White Dwarfs", invited talk at "Exoplanets Orbiting Hot Stars", at Vanderbilt University, Nashville (June 22, 2018).

"Compositions of Extrasolar Minor Planets from Polluted White Dwarf Studies", invited talk at Goldschmidt conference in Boston (August 15, 2018).

F.3 Press Release and Other

Siyi Xu

Press Release: “Study of material surrounding distant stars shows Earth's ingredients 'pretty normal'”, EurekAlert, August 15, 2018. https://www.eurekalert.org/pub_releases/2018-08/gc-som081418.php)

Highlighted Work: “"Water Worlds in the Milky Way" Astronomy Magazine, June 2018

F.4 Non-Faculty Staff Achievements

Staff Member	Qualification or Achievement
Gustavo Alarcon - Electrical Technician 1, Gemini South Summit	“Ingeniero de ejecución en electricidad (Universidad la Republica)” Equivalent: Bachelor’s Degree in Civil Electrical Engineering

Joseph D'Amato - Project Administrator 1, Gemini North Summit	Master of Science Degree - major in Project Management (Boston University)
Alysha Shugart - Gemini South SOS	Masters of Science in Astronomy (New Mexico State University) Ggraduates December