

GEMINI OBSERVATORY

Exploring the Universe, Sharing its Wonders





Gemini North Cloaked Dome

This “invisible dome” image of the Gemini North telescope was made by digitally “stacking” images of the open Gemini dome as it rotated. Approximately 40 individual 5-second exposures were stacked to produce the transparent dome effect, and one additional one-minute exposure was obtained of the sky after the dome rotation.

The Frederick C. Gillett Gemini North Telescope is located on Hawaii’s Mauna Kea as part of the international community of observatories built to take advantage of the superb atmospheric conditions on this long dormant volcano that rises 4,214 meters into the dry, stable air of the Pacific. The Gemini Observatory’s international headquarters is located in Hilo, Hawai‘i at the University of Hawai‘i at Hilo’s University Park.

Both of the Gemini telescopes are designed to excel in a wide variety of optical and infrared capabilities. By incorporating technologies such as laser guide star adaptive optics and multi-object spectroscopy, astronomers in the Gemini partnership are exploring the universe in unprecedented depth and detail.

Gemini is operated by an international partnership that includes the United States, United Kingdom, Canada, Chile, Australia, Brazil and Argentina. Any astronomer in each partner country can apply for time on Gemini which is allocated in accordance with the amount of financial support provided by each country.

The Gemini telescopes are integrated with the latest networking technologies to allow remote operations from control rooms at the base facilities in Hilo and La Serena Chile. With the flexibility of “Queue Scheduling” and remote participation, researchers anywhere in the Gemini partnership will be assured the best possible match between observations, instruments and observing conditions.

Gemini Observatory – Facts and Figures:

Primary Mirror:

Diameter: 8.1 meters/26.58 feet/319 inches

Mass: 22.22 metric tonnes/24.5 U.S. tons

Composition: Corning Ultra-Low Expansion (ULE) Glass

Surface Accuracy: 15.6 nm RMS (Between 1/1000 – 1/10,000 thickness of human hair)

Telescope Structure:

Height: 21.7 meters/71.2 feet/7 stories (from “Observing Floor”)

Weight: 380 metric tonnes/418 U.S. tons

Optomechanical Design: Alt-azimuth/Cassegrain

Dome:

Height: 46 meters/151 feet/15 stories (from ground)

Weight: 780 metric tonnes/858 U.S. tons (moving mass)

Rotation: 360 degrees in 2 minutes

Thermal Vents: 10 meters/32.8 feet (width – fully open)

Other Data:

Elevation: Gemini North: 4,214 meters/13,824 feet

Gemini South: 2,737 meters/8,980 feet

Location: Gemini North: 19°49.4’N/155°28.1’W

Gemini South: 30°14.5’S/70°44.8’W

Go to: www.gemini.edu/images to see this and other images.