

# Simulating GLAO Observations of Distant Galaxies

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# Scientific Objectives

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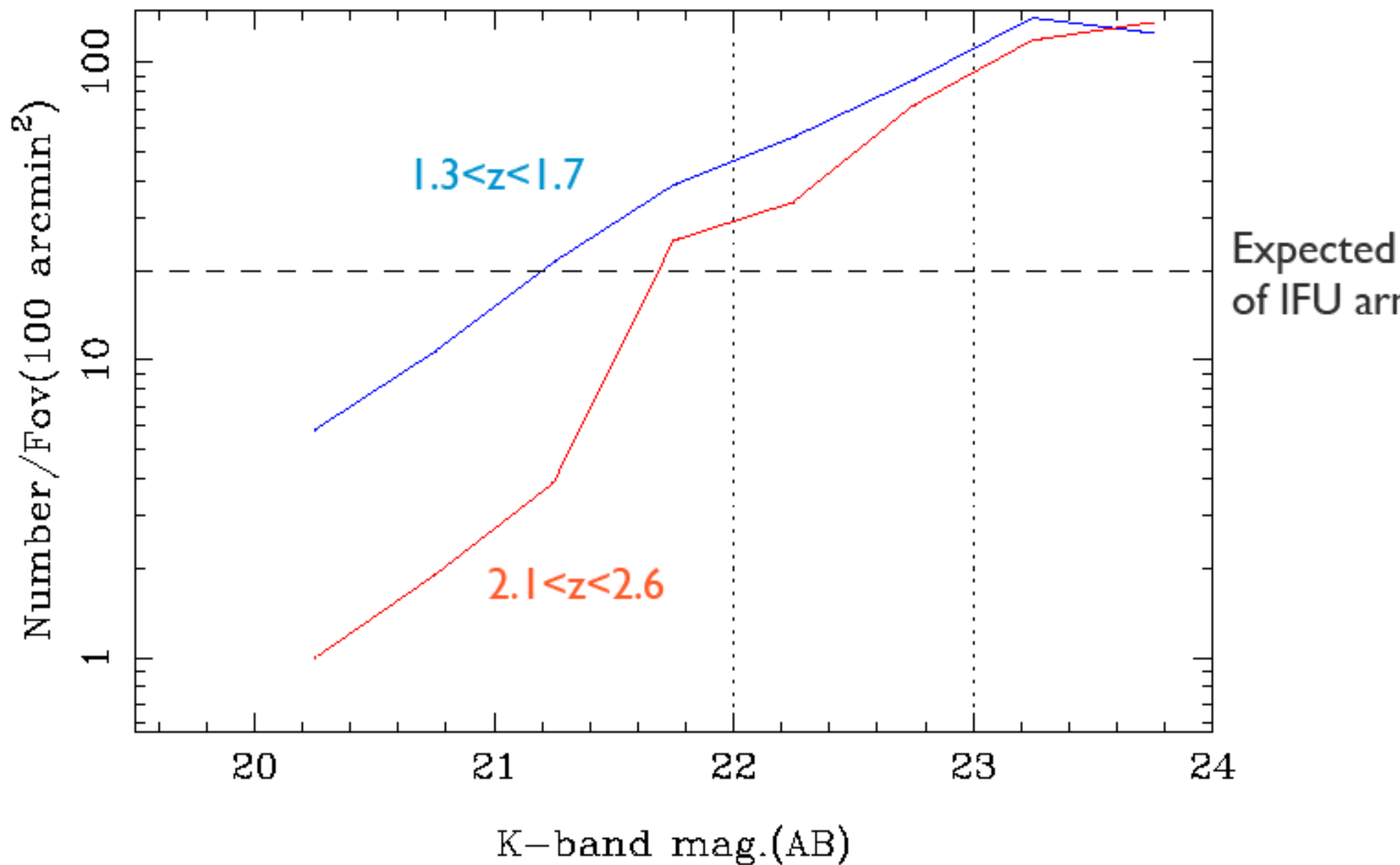
we know the outline of the Cosmic Star Formation History  
there are a lot of unresolved questions; we (briefly) know what  
happened, but we don't know *How* it has happened

## Observations:

**Large sample:** we need unbiased sample of galaxies at various  
redshift for statistically complete discussions, high dynamical  
ranges of physical parameters (mass, age, SFR, environment)

**Resolved imaging and spectroscopy:** galaxies have complex  
internal structures. We need finer views of morphologies and  
Integral Field Spectroscopy.

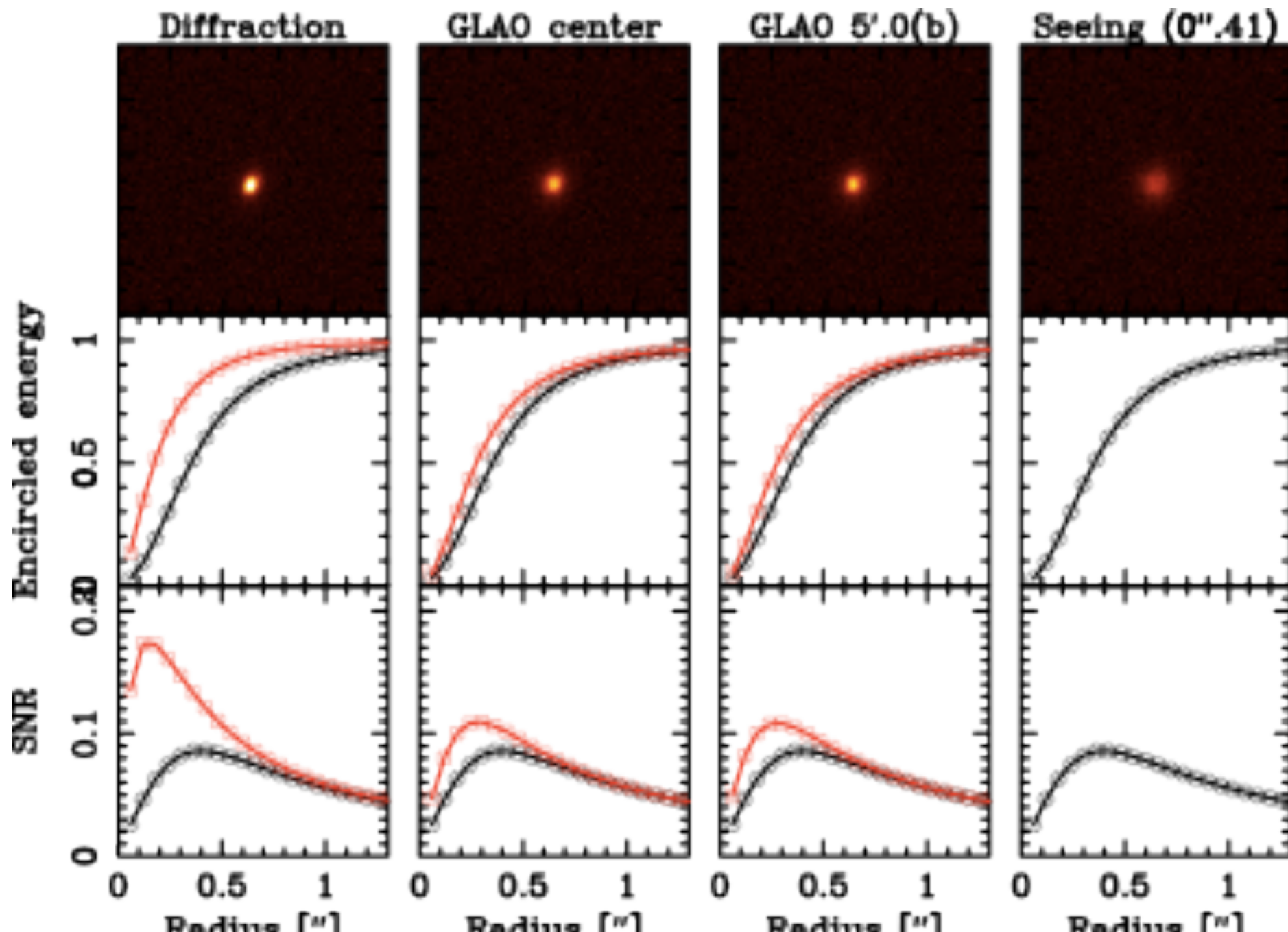
# Number Density of Distant Galaxies



$1.3 < z < 1.7$ : 40 ( $K_{AB}=22$ ), 100 ( $K_{AB}=23$ )

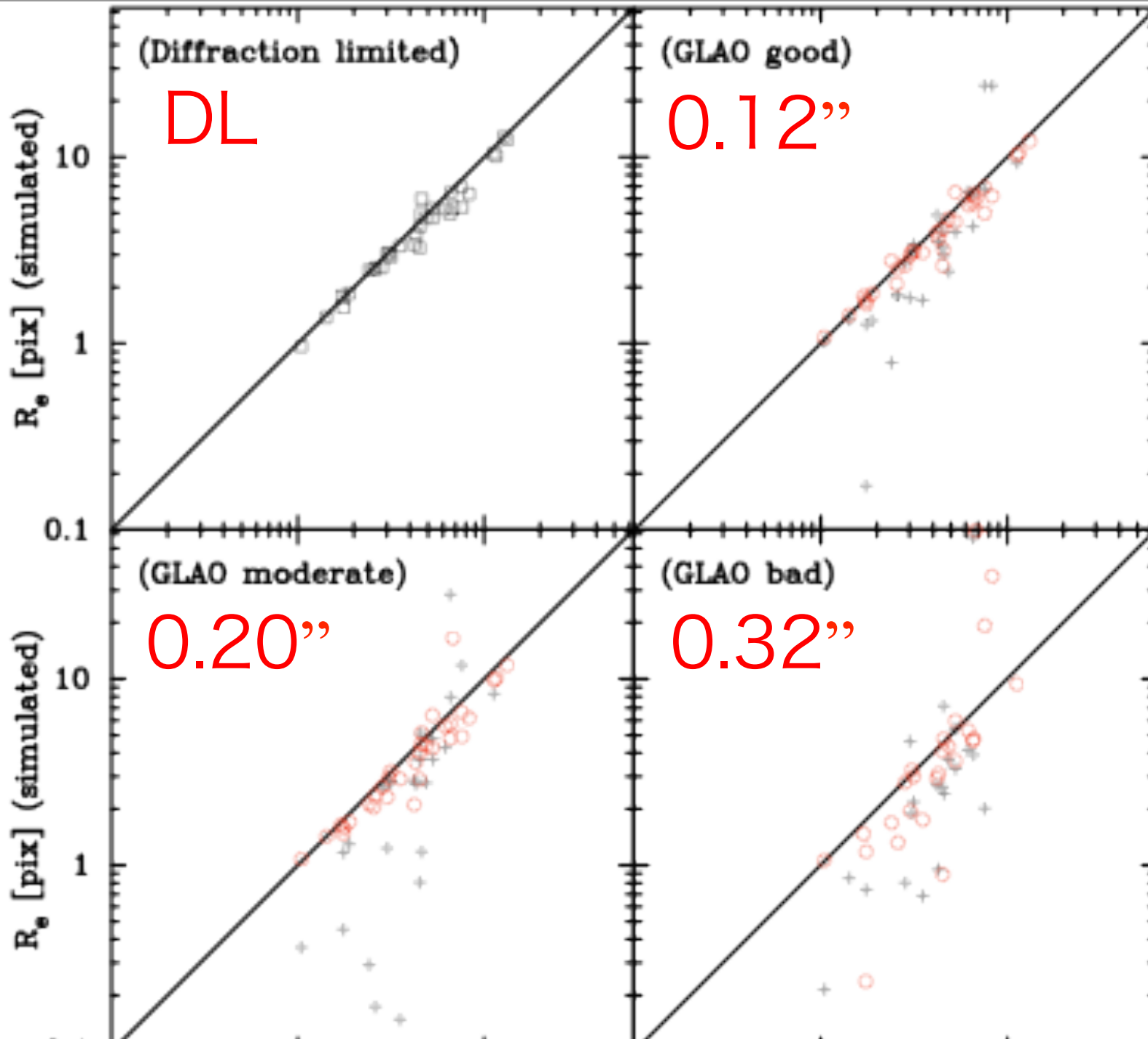
# Simulating Imaging Obs. of $z \sim 2$ Star-forming Galaxies

0.20"



# Simulating Imaging Obs. of $z \sim 2$ Star-forming Galaxies

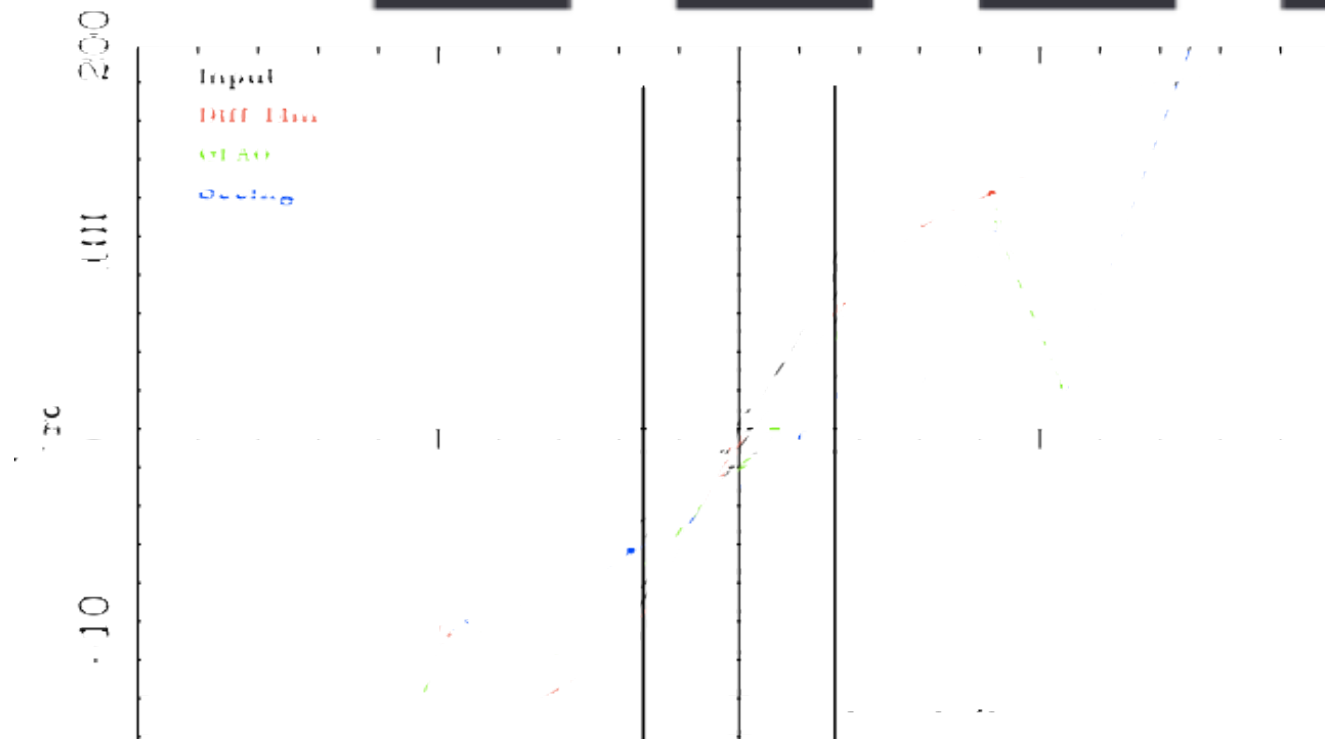
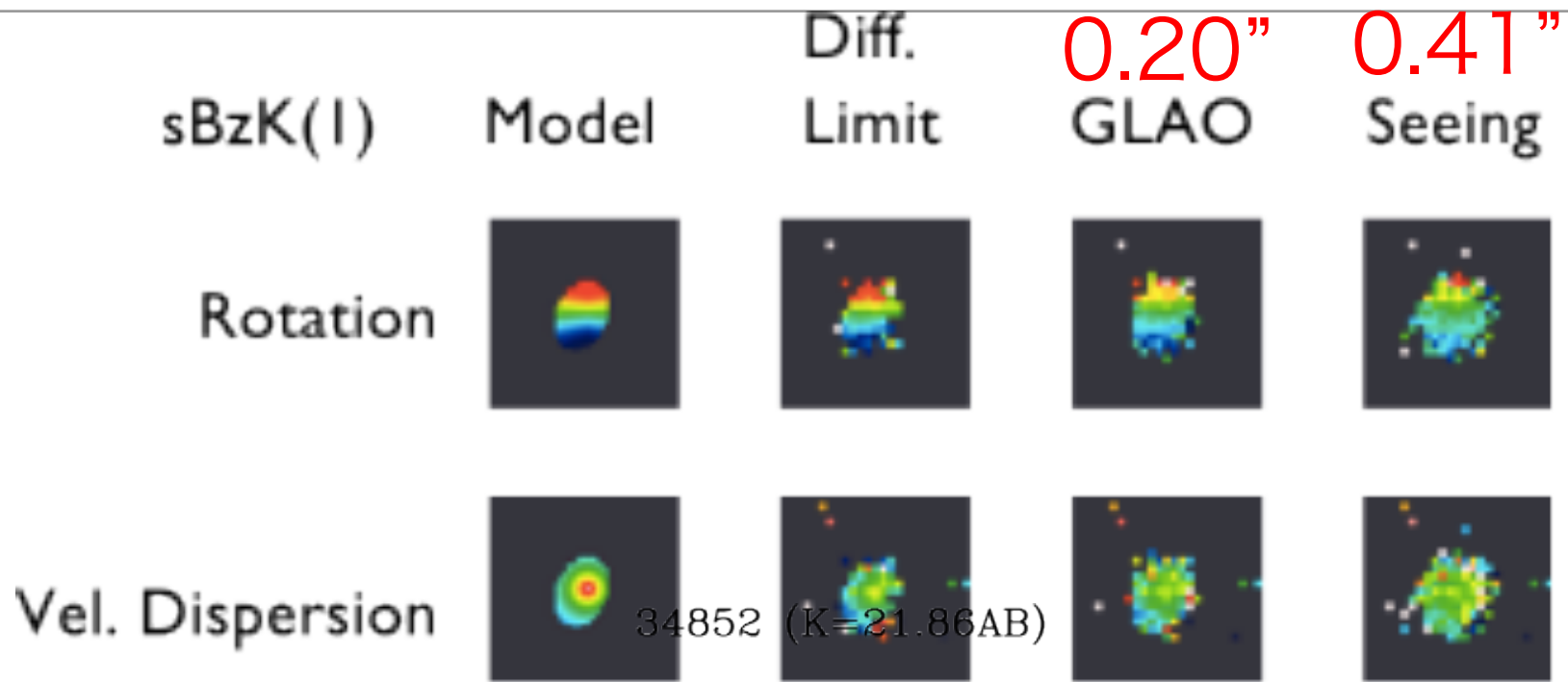
original



$R_e$   
(K-band)

For Ser  
DL is n

# Simulating Integral-Field Spectroscopy



AO is a strong candidate of Next-Gen AO for Subaru  
simulations of GLAO and observations of distant galaxies  
using GLAO

~0.2 - 0.5 mag. sensitivity enhancement

Better size determinations

Better measurement of internal kinematics

AO + Wide-Field Multi-Object IFS

Legacy '3D' Survey of Many Distant Galaxies