

# GNAO

The next-generation adaptive optics for Gemini North

**High-redshift galaxies**

**Time domain/ multi-messenger**

**Star clusters**

**AGN feedback/ galaxy evolution**

**Giant planets and moons**

**Star formation**

**GNAO**

**Object Selector**

**Deformable Mirror**

**IFS**

**Open-loop AO**

**4x multiplexing advantage over similar instruments.**

[gemini.edu/about/gemini-era-multi-messenger-astronomy](http://gemini.edu/about/gemini-era-multi-messenger-astronomy)

- Part of NSF-funded Gemini in the Era of Multi-Messenger Astronomy (GEMMA) program
- Telescope: 8-meter Gemini North telescope (Maunakea)
- Adaptive Optics:
  - 4 laser guide stars, 1-3 natural guide stars, 1 deformable mirror
  - Narrow field mode (20" x 20") with LTAO
  - Wide field mode (2' diameter) with GLAO
- First-light instrument: Gemini Infrared Multi-Object Spectrograph (GIRMOS)
  - Up to 4 deployable IFUs with LTAO or GLAO+MOAO
  - Wavelength range 0.95-2.4 microns
  - NIR imager (85" x 85" field of view) with GLAO or LTAO
- First light: Early 2028



# Science Target

Natural Guide Stars



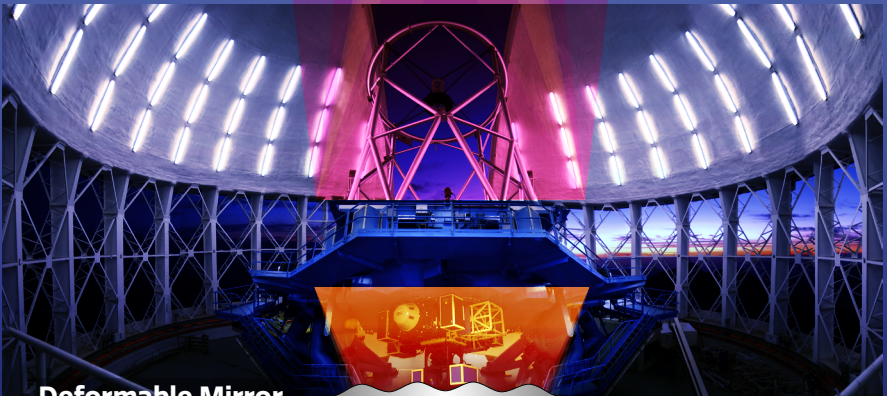
Laser Guide Stars (Wide Field)



Laser Guide Stars (Narrow Field)

High Altitude Layer

Ground Layer



Deformable Mirror



Real Time Controller

Wave Front Sensors

