

Gemini North Telescope

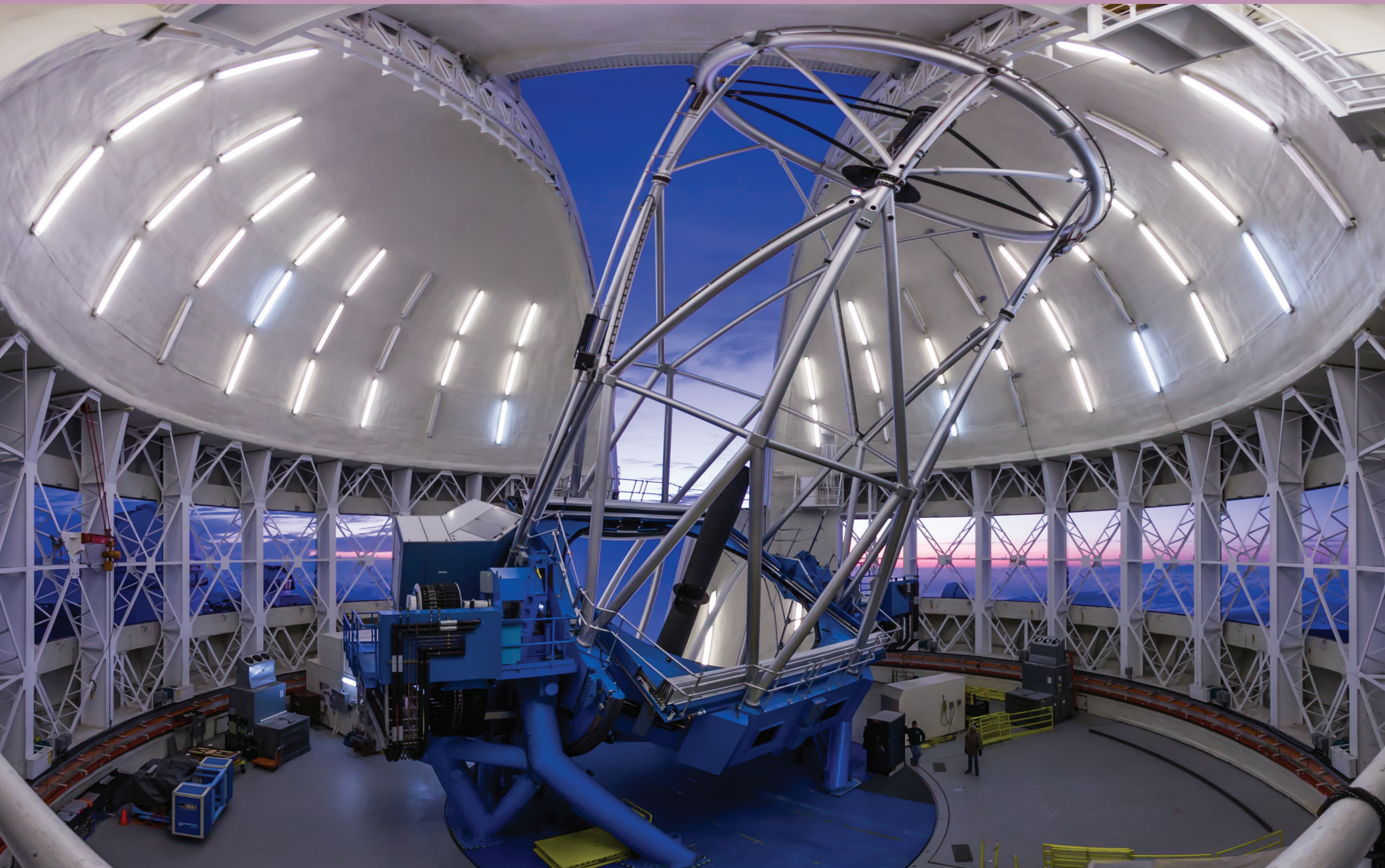


Image Credit: Gemini Observatory/AURA/Joy Pollard

Gemini Observatory Legacy Image



The Gemini Observatory is operated by the Association of Universities for Research in Astronomy, Inc., under a cooperative agreement with the National Science Foundation on behalf of the Gemini Partnership.



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Gemini North Telescope

The 8-meter Frederick C. Gillett Gemini North telescope is located near the summit of Hawaii's Maunakea — a long dormant volcano rising 4,205 meters into the dry, stable air of the North Pacific. Gemini North was designed and built, in part, to provide the best image quality possible from the ground for telescopes of its size.

Four significant features help the telescope achieve this goal: (1) An ~20-centimeter-thin primary mirror on a bed of 120 hydraulic actuators; (2) a 1-meter-diameter secondary mirror capable of rapid tip-tilt corrective motions; (3) vents on the cylindrical walls to provide a smooth flow of air above the primary mirror, and to regulate the temperature of the air above the mirror to match the outside temperature; and (4) an adaptive optics system which can correct for image blurring caused by atmospheric turbulence.

Gemini North and its twin telescope in Chile are the only large telescopes in the world with silver-coated primary mirrors. These special coatings make the telescopes excel in a wide variety of optical and infrared capabilities, allowing astronomers in the Gemini Partnership to explore the Universe in unprecedented depth and detail.

Gemini Observatory Facts

PRIMARY MIRRORS:

Diameter: 8.1 meters; 26.57 feet; 318.84 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 STRUCTURES:

Height: 21.7 meters; 71.2 feet; 7 stories (from "Observing Floor")
 Weight: 380 metric tonnes; 419 U.S. tons
 Optomechanical Design: Cassegrain ; Alt-azimuth

DOMES:

Height: 46 meters; 151 feet; 15 stories (from ground)
 Weight: 780 metric tonnes; 860 U.S. tons (moving mass)
 Rotation: 360 degrees in 2 minutes
 Thermal Vents: 10 meters; 32.8 feet (width – fully open)

GEOGRAPHICAL 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

To see this, and many other images, please visit:
<http://www.gemini.edu/legacyph>

