

“Child” of Another Star

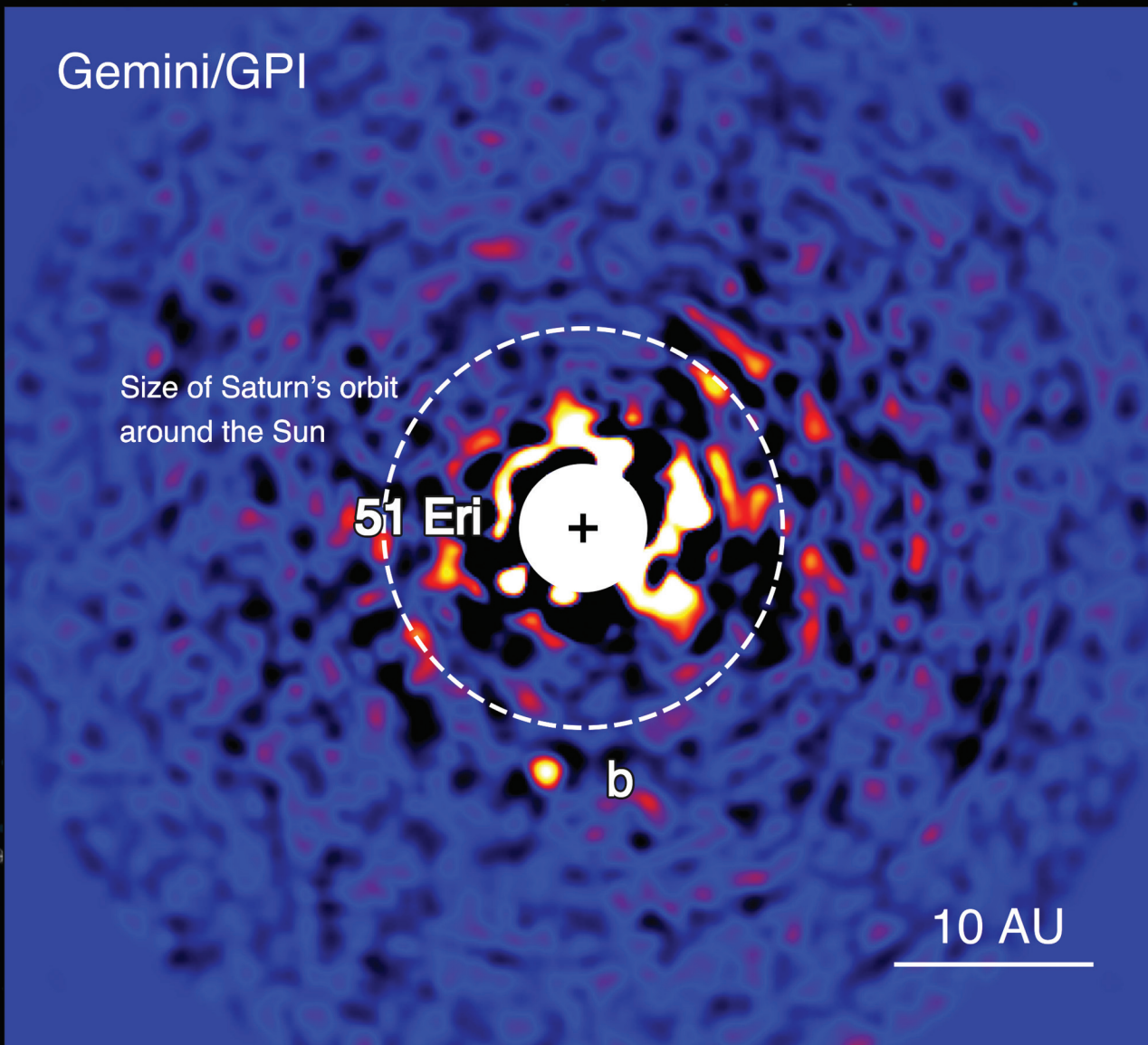


Image Credits: inset, Gemini Observatory/ AURA/ C. Marois (NRC- Herzberg) and J. Rameau (University of Montréal); background, Danielle Futselaar and Franck Marchis (SETI Institute)

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.



United States



Canada



Brazil



Argentina



Chile



“Child” of Another Star

This dual portrait shows the discovery image of exoplanet 51 Eridani b (51 Eri b; labelled “b” in the top image) and an artist’s visualization of the exoplanet in near-infrared light, which shows hot layers deep in its atmosphere glowing through clouds.

The discovery was made using the Gemini Planet Imager (GPI) — the most powerful of its kind — on the Gemini South telescope in Chile. GPI uses the most advanced adaptive optics technologies to achieve unprecedented performance. The starlight is blocked by a coronagraph to mask and diminish the primary star’s glare, revealing faint point sources close to the star.

51 Eri b is unique in many aspects: It’s the least-massive exoplanet definitively imaged to date (earlier instruments would not have been sensitive enough to detect it); the giant planet’s clouds are among the most tenuous known, allowing studies deep into its atmosphere; and the object resembles what Jupiter might have looked like soon after its formation.

Because of its age, this young cousin of our own Jupiter is still hot and carries information on the way it was formed some 20 million years ago.

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>