NSF Cerro Tololo Inter-American Observatory

Vela Supernova Remnant

NSF | NOIR Lab AURA CERRO TOLOLO INTER-AMERICAN OBSERVATORY

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The U.S.National Science Foundation Cerro Tololo Inter-American Observatory (CTIO), a Program of NSF NOIRLab, is a complex of astronomical telescopes and instruments located in the Coquimbo Region of northern Chile, approximately 500 kilometers (310 miles) north of Santiago, and 80 kilometers (50 miles) to the east of La Serena, Chile, at an altitude of 2200 meters (7200 feet). Cerro Tololo was selected as the best location for a new observatory in the southern hemisphere in 1962 and is now home to over 40 telescopes, including 11 tenant observatories and projects.

CTIO operates the Víctor M. Blanco 4-meter Telescope on Cerro Tololo, which features the Dark Energy Camera (DECam), a high-performance, wide-field CCD imager designed for the Dark Energy Survey and built by the US Department of Energy Office of Science. The telescope is identical to the Nicholas U. Mayall 4-meter Telescope in the northern hemisphere at NSF Kitt Peak National Observatory (KPNO). CTIO also operates the 4.1-meter Southern Astrophysical Research (SOAR) Telescope on the adjacent Cerro Pachón, which delivers some of the sharpest images at wavelengths from optical to near-infrared.

Significant discoveries made with observations and data from CTIO include the discovery and confirmation of dark energy and the accelerated expansion of the Universe, and the observations of the first light from a gravitational wave source. The telescopes at CTIO also investigate a wide variety of research topics, including exoplanets, the Sun, Earth's atmosphere, meteors, supernovae, gamma-ray bursts, and dark energy. Some of these telescopes are also used for educational purposes. Since the 1970s, the general public has had access to free guided visits to the observatory facilities once a week (on Saturdays).

After over six decades of discovery at CTIO, the site continues to be at the forefront of astronomical discovery, and will be working in tandem with the new Vera C. Rubin Observatory on Cerro Pachón which promises to revolutionize the field of astronomy by conducting a ten-year survey.

The astronomical community is honored to have the opportunity to conduct astronomical research on Cerro Tololo and Cerro Pachón in Chile. We recognize and acknowledge the very significant cultural role and reverence that these sites have to the local communities in Chile.

NSF Cerro Tololo Inter-American Observatory Facts

Name: The name of the mountain, Cerro Tololo, which was retained as the name of the observatory, comes from the native Diaguita language.

Location: 80 kilometers (50 miles) east of La Serena, Chile

Altitude: 2200 meters (7200 feet)

Established: 1962

Telescopes: over 40

Mirrors: The largest mirror on Cerro Tololo is 4 meters in diameter and is mounted on the Víctor M. Blanco 4-meter Telescope. The SOAR Telescope on Cerro Pachón has a 4.1-meter diameter primary mirror.

Major Discoveries: Measurements of the redshifts and brightnesses of supernovae led astronomers to conclude that the expansion of the Universe is accelerating. This discovery led to the theory of the influence of dark energy. Astronomers also discovered the second most distant quasar ever found, using the international Gemini Observatory and CTIO. The quasar was the first to receive an indigenous Hawaiian name, Pōniuāʻena.

History: Cerro Tololo was the first international scientific observatory to be installed in Chile in the early 1960s.

Tours: Free guided bilingual tours on Saturdays at 9 a.m. and 1 p.m.

About the Images

Front: With the powerful, 570-megapixel Department of Energy-fabricated Dark Energy Camera (DECam), astronomers have constructed a massive 1.3-gigapixel image showcasing the central part of the Vela Supernova Remnant, the cosmic corpse of a gigantic star that exploded as a supernova. DECam is one of the highest-performing wide-field imaging instruments in the world and is mounted on the NSF Víctor M. Blanco 4-meter Telescope at NSF Cerro Tololo Inter-American Observatory, a Program of NSF NOIRLab. *Credit: CTIO/NOIRLab/NSF/AURA*

Back: The dark skies of the Andean mountains come alive as a dazzling light show in this panorama of NSF Cerro Tololo Inter-American Observatory (CTIO), a Program of NSF NOIRLab. Standing in the foreground are some of the observatory's biggest telescopes: (left to right) the decommissioned CHilean Automatic Supernova sEarch (CHASE), the SMARTS 1-meter Telescope, the Curtis Schmidt Telescope, the NSF Víctor M. Blanco 4-meter Telescope, the SMARTS 1.5-meter Telescope, and the SMARTS 0.9-meter Telescope. *Credit: CTIO/NOIRLab/NSF/AURA/T. Slovinský*