National Optical Astronomy Observatory

The National Optical Astronomy Observatory (NOAO) is the U.S. national research and development center for ground-based nighttime astronomy with a core mission to provide access to state-of-the-art scientific capabilities for all qualified professional researchers via peer review.

Scientific Accomplishments

1970s, Dark Matter
Dark Matter was originally discovered through careful observations of the motions of stars in rotating spiral galaxies using the 2.1-m Telescope on Kitt Peak. Newtonian mechanics requires unseen “dark matter” to explain the high observed stellar velocities.

1998, Dark Energy
Observations of distant supernovae were made on NOAO telescopes and led directly to the discovery of dark energy. Understanding dark energy, which comprises 70% of the known universe, is one of the most pressing questions facing physicists today.

2011, Nobel Prize
The 2011 Nobel Prize in Physics was awarded to Saul Perlmutter, Brian Schmidt, and Adam Riess for determining that the Universe is accelerating, one of the more surprising cosmological results in modern astronomy. Use of NOAO-operated facilities enabled the discovery in large part, with the Blanco 4-m telescope at Cerro Tololo in Chile playing a key role.

2012, New Large Surveys
The Dark Energy Survey (DES) seeks to characterize Dark Energy and will begin in 2012 with the deployment of the Dark Energy Camera (DECam) at NOAO’s Blanco 4-m telescope. DES is led by Fermilab (DOE) and is a model for large astrophysics experiments executed by DOE and NSF.

Societal Impact

NOAO has a broad user base with scientists coming from most states in the Union. The facilities are available to any qualified scientist from any institution and all time is granted based only on peer review of the proposed science.