

The Dark Energy Survey

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The Nobel Prize in Physics for 2011 was awarded for the discovery that the expansion of the Universe is accelerating. Yet the physical origin of cosmic acceleration remains a mystery. The Dark Energy Survey (DES) aims to address the questions: why is the expansion speeding up? Is cosmic acceleration due to dark energy or does it require a modification of General Relativity? If dark energy, is it the energy density of the vacuum (Einstein's cosmological constant) or something else? DES will address these questions by measuring the history of cosmic expansion and of the growth of structure through four complementary techniques: galaxy clusters, large-scale galaxy clustering, weak gravitational lensing, and supernovae. The DES collaboration has built a new, 570-megapixel, digital camera for the Blanco 4-meter telescope at Cerro Tololo Inter-American Observatory in Chile to carry out a deep, wide-area sky survey of 300 million galaxies and a narrower, time-domain survey that will discover 4000 supernovae over 525 nights starting in Sept. 2013. This talk will overview the DES project, which achieved 'first light' in September 2012, describe early science results from commissioning and science verification of the instrument, and discuss the plans and goals of the survey.

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