

APR13-2013-020059

Abstract for an Invited Paper
for the APR13 Meeting of
the American Physical Society

Dark Energy Survey: understanding the acceleration of the Universe

JIANGANG HAO, Fermi National Accelerator Laboratory

The Dark Energy Survey (DES) is a next generation optical survey aimed at understanding the expansion rate of the universe using four complementary methods: weak gravitational lensing, galaxy cluster counts, baryon acoustic oscillations, and Type Ia supernovae. Using a new 570 Megapixel CCD camera mounted on the Blanco 4-meter telescope at the Cerro Tololo Inter-American Observatory in Chile, the survey will image over 5000 square-degrees of the southern galactic cap with 5 filters (g, r, i, z, Y) in 5 years and improve the constraints on the evolution of the equation of state of Dark Energy by a factor of 3 - 5. After achieving first light on Sept. 12, 2012, the DES is moving forward at amazing speed. Commissioning was carried out in Sept-Oct., 2012, followed by Science Verification that was successfully completed by February 2013. During the Science Verification, DES has been focusing on three patches of the sky, imaging a couple of hundred square degrees at full DES depth. Of the three patches, one is along the southern celestial equatorial region, overlapping with many existing optical surveys for better calibration, and the other two are overlapping with the South Pole Telescope (SPT) Sunyaev-Zel'dovich survey in the southern sky. The official survey will start in Sept. 2013 and a lot of exciting science is just ahead.