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Early Science Results from the Dark Energy Survey

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The Dark Energy Survey (DES) is a next-generation large galaxy survey designed to unravel the mystery of the nature of the dark energy that powers the current accelerated expansion of the Universe. The DES collaboration built and participated in the installation and commissioning of DECam, a 570 mega-pixel optical and near-infrared camera with a large 3 $\deg^2$ field of view, set at the prime focus of the Víctor M. Blanco 4-meter telescope in at the Cerro Tololo Inter-American Observatory in Chile. Using DECam, DES will map 5000 $\deg^2$ to a depth $I_{AB} \sim 24$ and observe designated supernova survey fields at high cadence. These data will allow DES to measure positions, approximate redshifts, and shapes for 300 million galaxies, the light-curves of several thousand supernovae, and the masses of tens of thousands of galaxy clusters. Using these data, DES will use four main probes to study the properties of dark energy: galaxy clustering on large scales, weak gravitational lensing, galaxy-cluster abundance, and supernova distances. I describe the early progress of the survey and provide highlights of the science analyses that have been completed so far. These include: large-scale galaxy clustering measurements; significant detection of a cross-correlation with SPT CMB lensing maps; galaxy-shear and shear-shear correlation function measurements; discoveries of super-luminous supernovae, dozens of strong lenses, and redshift > 6 quasars; and characterization of DES galaxy clusters and SNe1a light-curves.