

Dark Energy Spectroscopic Instrument: Science Overview

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Some of the open questions in fundamental physics can be addressed by looking at the distribution of matter in the Universe as a function of scale and time (or redshift). We can study the nature of dark energy, causing the accelerated expansion of the Universe. We can measure the sum of the neutrino masses, and potentially determine their hierarchy. We can test the standard model at energies higher than those accessible at the laboratory, by studying the primordial density perturbations. The Dark Energy Spectroscopic Instrument (DESI) has just started a 5-years program to generate the largest and most accurate 3D map of the distribution of galaxies and quasars. By measuring the statistical properties of these catalogs, DESI will be able to reconstruct the expansion history of the Universe over the last 11 billion years, while making precise measurements of the growth of structure. In this presentation, I will review the forecasted performance of the DESI survey, and show how it will dramatically improve our understanding of dark energy, inflation, and the mass of the neutrinos.

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No

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