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The Large Synoptic Survey Telescope

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Recent technological advances have made it possible to carry out deep optical surveys of a large fraction of the visible sky. Such surveys enable a diverse array of astronomical investigations including: the search for small moving objects in the solar system, studies of the assembly history of the Milky Way, the establishment of tight constraints on models of dark energy using a variety of independent techniques and the exploration of the transient sky. The Large Synoptic Survey Telescope (LSST) is the most ambitious project of this kind that has yet been proposed. With an 8.4 m primary mirror, and a 3.2 Gigapixel, 10 square degree camera, LSST will provide nearly an order of magnitude improvement in survey speed over all existing surveys, or those which are currently in development. Over its ten years of operation, LSST will survey 20,000 square degrees of the sky in six optical colors down to the 27th magnitude. At least a thousand distinct images will be acquired of every field, enabling a plethora of statistical investigations for intrinsic variability and for control of systematic uncertainties in deep imaging studies. In this talk some of the science that will be made possible by the construction of LSST, especially dark energy science, and a brief overview of the technical design and current status of the project will be given.

Primary author: Prof. SHIPSEY, Ian (Purdue University)

Presenter: Prof. SHIPSEY, Ian (Purdue University)

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