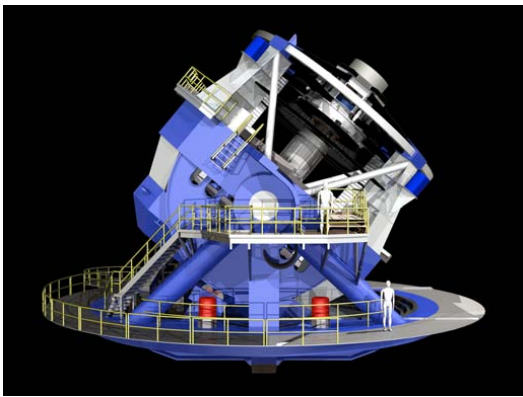


# The School of Physics and Astronomy presents The Schuster Colloquium



All staff and students are invited  
to attend the Schuster Colloquium on Wednesday  
12<sup>th</sup> March at 14.30 in the Rutherford Lecture  
Theatre, Schuster Building.

Prof. Ian Shipsey  
Oxford University

*The Large Synoptic Survey Telescope*

Recent technological advances have made it possible to carry out deep optical surveys of a large fraction of the visible sky. These surveys enable a diverse array of astronomical and fundamental physics investigations including: the search for small moving objects in the solar system, studies of the assembly history of the Milky Way, the exploration of the transient sky, and the establishment of tight constraints on models of dark energy using a variety of independent techniques. The Large Synoptic Survey Telescope (LSST) brings together astrophysicists, particle physicists and computer scientists in 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 CCD camera, LSST will provide nearly an order of magnitude improvement in survey speed over all existing optical surveys, and those which are currently in development. Expected to begin construction later in 2014, and to enter commissioning in 2020, in its first month of operation LSST will survey more of the universe than all previous telescopes built by mankind. Over the full ten years of operation, it will survey half of the sky in six optical colors, discovering four billion new galaxies and 10 million supernovae. At least 800 distinct images will be taken of every field, enabling a plethora of statistical investigations for intrinsic variability and for control of systematic uncertainties in deep imaging studies. LSST will produce 15 TB of data per night, yielding a data set of over 100 PB over ten years. Dedicated Computing Facilities will process the image data in near real time, and issue worldwide alerts within 60 seconds for objects that change in position or brightness. In this talk I will describe some of the science that will be made possible by the construction of LSST, especially dark energy science, which constitutes a profound challenge to particle physics and cosmology, and an overview of the technical design and current status of the project will be given.