

# Seminar

Thursday, 12 November 2009

11 am - Room 701

**Robert P. Kirshner**

Clowes Professor of Science, Harvard University

## *Fundamentals of Supernova Cosmology*

Since the surprising discovery of cosmic acceleration in 1998, observations have converged on a picture in which the universe has  $\sim 2/3$  dark energy and  $\sim 1/3$  dark matter. Ordinary baryons, lost in the round-off error, are only about 4% of the mass-energy in the universe. Now our effort has shifted to determining the properties of the dark energy. Is dark energy a constant, like a modern version of Einstein's cosmological constant, or has it changed over cosmic time? Supernova samples are now large enough that systematic errors dominate over statistical uncertainties, so better understanding, not just a larger sample, is required to make progress on this question. New observations carried out at near-infrared wavelengths promise to reduce these errors and lead to a more certain knowledge of the nature of dark energy. This talk will sketch the present constraints on dark energy, illustrate how these can be improved with near-infrared measurements of supernovae, and speculate on the best strategy for future measurements with the proposed Joint Dark Energy Mission.

*All Welcome*

### Contact Details

For further information phone 364 2404, or visit our website: [www.phys.canterbury.ac.nz](http://www.phys.canterbury.ac.nz)