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A Public Lecture Series

Roberto Trotta

Theoretical Cosmologist at Imperial College London and an STFC Public Engagement Fellow

Date and Time

17 February, Friday, 4:00 PM to 5:00 PM

Venue

Room AG69, Tata Institute of Fundamental Research
Dr. Homi Bhabha Road,
Navy Nagar, Mandir Marg,
Colaba, Mumbai, Maharashtra 400005

About the Speaker

Roberto Trotta is a theoretical cosmologist at Imperial College London, where he studies dark matter, dark energy and the Big Bang, and an STFC Public Engagement Fellow. Roberto was born and grew up in the Italian speaking part of Switzerland. After obtaining an MSc(hons) in Physics from ETH Zurich and a PhD in Theoretical Physics from the University of Geneva, he moved to Oxford where he was the Lockyer Fellow of the Royal Astronomical Society at Oxford University, and a Junior Fellow of St Anne's, before being appointed at Imperial in 2008.

Lecture Abstract

Measuring the expansion history of the Universe with Supernovae Type Ia: successes and pitfalls

Supernovae type Ia (SNIa) are one of the observational pillars of the concordance cosmological model, and have been instrumental in determining the existence of dark energy. While the observational effort has been very successful in finding over 1,000 cosmologically useful SNIa's, the sophistication of statistical methods employed to analyse the data and infer cosmological parameters has been lagging behind. Prof Robert will present an overview of the status of SNIa comsmology, as well as new results from BAHAMAS (BAyesian HierArchical Modeling for the Analysis of Supernova cosmology), a fully Bayesian analysis of SNIa data, a demonstrably superior approach which improves on many shortcomings of the usual method. He will discuss how environmental effects in the SNIa's host galaxies must be taken into account in order to reduce systematic errors and to exploit upcoming large SNIa's data sets. He will present recent findings suggesting that the distance of the SNIa's to their host galaxy can be used to improve their usage as standard candles.