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国台学术报告 NAOC COLLOQUIUM

2016 年 第 25 次 ／ No. 25 2016

Time: Wed. 2:30 PM, Sep. 07   Location: A601 NAOC

Gravitational lensing of the Cosmic Microwave Background: flux conservation and growth of inhomogeneities

Prof. John Peacock

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John Peacock is a well-known cosmologist, with research interests at the interface between theory and observation. He has spent most of his career at the Royal Observatory Edinburgh and at the University of Edinburgh, where he was Head of Astronomy from 2007 to 2013. He has written extensively on statistical methods for studying cosmological density fields, including developing the widely-used Halo Model. He was UK Chairman of the 2dF Galaxy Redshift Survey (1999-2005). He is the author of "Cosmological Physics", a highly successful postgraduate textbook. Between 2015 and 2020, his work will be supported by an Advanced Grant from the European Research Council. Major awards for his research include election as a Fellow of the Royal Society (2007) and the Shaw Prize in Astronomy (2014).

Abstract

Gravitational lensing probes both the amplitude and evolution of cosmological metric fluctuations, plus the distance-redshift relation. But relativists have claimed that lensing also causes an average non-Newtonian "back-reaction" effect, which alters the effective distance to the CMB last-scattering surface, causing substantial error in the cosmological parameters we infer. The first part of this talk discusses this issue from the point of view of flux conservation theorems due to Weinberg and to Kibble & Lieu. The second part of the talk presents some new results on cross-correlation between galaxy surveys (based on WISE & SuperCOSMOS) and CMB lensing data. These yield interesting measurements of the evolution of cosmological perturbations at redshift $z<0.5$.

All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.