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The Cosmic Microwave Background Radiation

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Dr. Yin-Zhe Ma is currently a CITA national fellow at University of British Columbia, Canada. He received his PhD at Institute of Astronomy from Cambridge University in 2011. His interests focus mainly on the cosmic peculiar velocity field study, CMB cosmology, SZ effect, gravitational lensing, 21cm measurement, general statistical method, dark energy and inflation tests.

Abstract

The CMB is one of the three corner stones of modern cosmology which has been systematically measured by COBE, WMAP and Planck satellites. In this talk, I will focus on discussing four topics which relate to the current and future observations of CMB:

- (1) Do the Planck-measured cosmological parameters indicate some new physics?
- (2) Is there an evidence of statistical anisotropy of the CMB?
- (3) Is there any prospect to receive polarization signal from early Universe?
- (4) What do the “scattered lights” from galaxy clusters tell about structure formation, and the “missing baryons”?

Eventually, I will quantify how much cosmological information can be measured in the Universe and discuss how the on-going 21-cm experiments can help us to measure modes of fluctuations.

