

Cosmology: A Golden Era

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BIOGRAPHY

Professor Yin-Zhe Ma obtained his Bachelor's degree in Physics from Nanjing University, a master's degree from the Institute of Theoretical Physics at the Chinese Academy of Sciences (supervisor: Prof. Rong-Gen Cai), and a Ph.D. degree in Astronomy from the University of Cambridge (supervisor: Prof. George Efstathiou FRS).

His research focuses on observational and theoretical cosmology aimed at understanding the fundamental laws of the Universe and uncovering the nature of dark energy and dark matter. He is currently a core member of the Square Kilometre Array (SKA) Science Working group, the Planck science team, Hydrogen Epoch Reionization Array (HERA), and the CMB Stage-4 experiment and LSST (Vera C. Rubin Observatory).

ABSTRACT

Cosmology, the understanding of the evolution of entire Universe, has progressed very fast in the past several decades with the advances of modern telescopes. I will give a brief overview of the modern cosmology of the last century and highlight its phenomenal successes and distinctive challenges. I will explain how and why the measurements of cosmic microwave background radiation, the relics of the primordial elements, and the galaxy distribution on large scales can improve our understanding of the hot big bang. Then I will also discuss its distinctive challenges, present the observational frontiers for this (next) decade of cosmology, highlighting where the new physics may possibly emerge.

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