引力波与宇宙学实验室 讲座预告

# Hubble tension from local perspective


## 王少江 (理论物理研究所)


Shao-Jiang Wang obtained his Ph.D. from the Institute of Theoretical Physics, Chinese Academy of Sciences (ITP-CAS) in 2018. He served as a postdoctoral researcher at the Tufts University in the United States from 2018 to 2020, and as a Special Research Assistant (Postdoctoral) at ITP-CAS from 2021 to 2023. Starting in 2023, he becomes a Fixed-Term Associate Professor at ITP-CAS, and was selected as an Associated Fellow at the Asia Pacific Center for Theoretical Physics (APCTP) in 2023. His primary research areas include gravitation and cosmology, recently focusing on the Hubble constant crisis and gravitational wave physics related to cosmological first-order phase transitions.


## Abstract

Resolving the Hubble tension, a key challenge in modern cosmology, involves reconciling discrepancies between early and late Universe observations. If traced to the early Universe, the tension pertains to the sound horizon, necessitating modifications to both primordial and late Universe. Alternatively, if rooted in the late Universe, it manifests as a discrepancy in absolute magnitude. Recent focus has shifted to the local Universe, revealing additional tensions: an intercept tension in the magnitude-distance relation between local and late Universes and a slope tension in the sample variance of Hubble-constant measurements within the local-scale Universe. Addressing the intercept tension can narrow down the Hubble tension to the first two rungs of the distance ladder, while the slope tension hints at a preference for a higher cosmological constant in denser regions, reminiscent of the late-time chameleon dark energy model.


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