DEPARTMENT OF PHYSICS
THE UNIVERSITY OF HONG KONG

Physics Colloquium

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From the Outskirt of the Brightest Galaxies to Mapping the Darkest Universe

February 5, 2025 (Wednesday)

5:00 p.m.

MWT4, 1/F, Meng Wah Complex, Main Campus, HKU

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Abstract:

Modern imaging surveys such as Euclid, Vera Rubin's LSST, and CSST will revolutionize our understanding of the Universe's bright and dark sides with deep imaging data and unprecedented weak gravitational lensing capabilities. In the last two decades, such a combination has demonstrated enormous potential to help us understand the physical connection between the galaxies and their dark matter halos. For example, I will introduce my research using data from the Subaru Telescope's primary focus camera - HSC - to understand the assembly of the most massive galaxies in the Universe. We illustrate the intriguing connection between the extended, low-surface brightness stellar halo of low-redshift massive galaxies and the properties of their dark matter halos and will discuss its implication in cosmology. Meanwhile, a more precise picture of galaxy-halo connection and cosmology model heavily rely on our 3-D map of the Universe from large spectroscopic surveys. I will introduce the 6.5-m MUltiplexed Survey Telescope (MUST) - an ambitious Stage-V facility to conduct the next-generation cosmological redshift surveys to probe the high-redshift Universe and help us explore the primordial physics. I will briefly introduce the current engineering progress, the development of our international collaboration, the design of the instruments, and the preliminary cosmological forecast.

Biography:

I am an associate professor at the Department of Astronomy at Tsinghua University. I received my Ph.D at Nanjing University in 2014 and have been a post-doc researcher at the University of Tokyo, UCSC, and Princeton University before I joined Tsinghua in 2021. I am an observational astrophysicist focusing on bridging the bright and dark side of galaxy evolution. I contribute to developing the Hyper-Suprime Camera (HSC) Subaru Strategic Program and the Merian survey, and I am a member of the Subaru PFS and DESI collaboration. I am currently the Project Scientist of the 6.5-m MUltiplexed Survey Telescope (MUST) collaboration led by Tsinghua.

Anyone interested is welcome to attend.

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