DEPARTMENT OF PHYSICS
THE UNIVERSITY OF HONG KONG

Physics Colloquium

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Cosmology, Supernovae and Black Holes through Cosmic Lenses

September 24, 2025 (Wednesday)

4:30 p.m.

KB132, 1/F, Knowles Building, Main Campus, HKU

Prof. Sherry SUYU
Technical University of Munich

Abstract:
Strongly lensed transients such as supernovae (SNe) and tidal disruption events (TDEs) are emerging as a new probe of cosmology, SNe and black holes. When a SN is strongly lensed by a foreground galaxy, multiple images of the SN will appear around the foreground galaxy at different times. Current and upcoming surveys including Euclid and the Rubin Observatory Legacy Survey of Space and Time (LSST) will capture hundreds of strongly lensed SNe, expanding the existing sample by two orders of magnitude. These surveys will also enable the discovery of the first strongly lensed TDEs. These events offer excellent opportunities to: (1) measure the Hubble constant via lensing time delays, shedding light on the Hubble tension, (2) obtain unprecedented constraints on SN progenitors through early-phase spectra, and (3) acquire unique insights on the emission mechanisms of TDEs that are crucial for studying black holes. I will give an overview of the first discoveries of lensed SNe and their cosmological implications, and show the rates of strongly lensed TDEs from upcoming surveys.

Biography:
Prof. Suyu is measuring the expansion rate of our Universe, probing the nature of dark energy, studying the formation/evolution of galaxies and their dark matter halos, and observing supernovae through gravitational lensing. She has led the H0LiCOW program (www.h0licow.org) that measured the distances to six gravitational lenses, establishing strong lensing as one of the best cosmological probes. She is also leading the HOLISMOKES program (www.holismokes.org) to study cosmology and supernova progenitors with lensed supernovae.

Prof. Suyu completed her PhD in 2008 at the California Institute of Technology. She then worked at the University of Bonn, University of California Santa Barbara and Stanford University as a postdoc and at the Academia Sinica Institute of Astronomy and Astrophysics as a faculty member. In 2016, she became a Research Group Leader at the Max Planck Institute for Astrophysics (MPA) and an Assistant Professor at TUM, as part of the Max Planck@TUM program. Professor Suyu is now an Associate Professor at TUM, and a Max Planck Fellow at MPA.

Anyone interested is welcome to attend.

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