DEPARTMENT OF PHYSICS
THE UNIVERSITY OF HONG KONG

香港天文與天體物理研究所
THE HONG KONG INSTITUTE FOR ASTRONOMY AND ASTROPHYSICS

HKIAA SEMINAR SERIES

Multiphase Gas Across Galactic Systems

From Early-Type Galaxies to Jellyfish Tails, from Optical IFUs to X-ray IFUs

SPEAKER

Prof. Yuanyuan SU

UNIVERSITY OF KENTUCKY

Dr. Yuanyuan Su is an associate professor with tenure at the University of Kentucky. Kentucky. She received her PhD from the University of Alabama. Before joining the joining the University of Kentucky, she was a postdoc fellow at Harvard-Smithsonian Smithsonian | Center for Astrophysics. Dr. Su's main research focuses on observations of galaxy clusters. In 2024, Dr. Su received the American Astronomy Astronomy Society High Energy Astrophysics Division Early Career Prize, which is which is awarded for a significant advance or accomplishment (observational or (observational or theoretical) in High Energy Astrophysics by an individual astrophysicist within 10 years of receiving their PhD. The citation of her award reads award reads "For innovative contributions and leadership in the analysis of galaxy of galaxy groups and clusters, which have advanced our understanding of baryon baryon physics on the largest cosmic scales."

ABSTRACT

Over the past decade, dedicated multi-wavelength studies of the nearby Universe have transformed our view of elliptical and lenticular galaxies (early-type galaxies, ETGs), revealing that, despite their long-standing reputation as being "red and dead," many harbor substantial reservoirs of multiphase gas. Understanding the origin of this gas is essential for uncovering how these galaxies quench their star formation and whether they can later rejuvenate. Interestingly, similar multiphase structures are also found in the stripped tails of jellyfish galaxies as these star-forming systems plunge through the intracluster medium of galaxy clusters.

Recent advances in integral field unit (IFU) observations have enabled us to move beyond simply detecting this gas and instead probe its detailed physical properties. In this talk, I will present studies from my group using the Multi Unit Spectroscopic Explorer (MUSE) on the Very Large Telescope (VLT), complemented by observations from the Chandra X-ray Observatory, to characterize the morphology, kinematics, and metallicity of warm ionized gas in ETGs. These observations reveal unexpected connections between ETGs and the stripped tails of jellyfish galaxies. Finally, I will discuss how NewAthena, with its unprecedented X-ray IFU capabilities, will open a new window onto the formation and evolution of multiphase gas across a wide range of galactic environments.

3 July 2026 (Friday)

2:00 – 3:00 PM

Venue: Room 522, 5/F · Chong Yuet Ming Physics Building

Department of Physics, The University of Hong Kong

Anyone interested is welcome to attend.

ZOOM FOR ONLINE PARTICIPANTS

Meeting ID 964 7297 1072
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