Astronomy Colloquium

TSUNG-DAO LEE INSTITUTE

Prof. Renbin Yan

(Chinese University of Hong Kong)

Spectroscopically Mapping Our Milky Way and Nearby Galaxies with AMASE

Time: 15:00-16:00, 14 May(Tuesday), Shanghai time

Venue: N602 (TDLI)

Host: Ying Zu

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Meeting ID: 136142403

Abstract:

Feedback from star formation and supernovae is known to regulate the star formation in galaxies and re-distribute metals in and around galaxies. However, the subgrid physics is still not well understood. Current photoionization models of star-forming regions also have many inconsistencies with observations, which are further complicated by correlations in the spatial distribution of dust and that of emission line ratios. These make it difficult to achieve precision gas astrophysics. AMASE is a planned project to provide unprecedented data for tackling these issues. AMASE will have a hundred identical fiber-based integral fields spectrographs paired with an array of telephoto lenses to achieve contiguous imaging spectroscopy over 1/4 of the sky at the spatial resolution of half an arcminute and a spectral resolution of R=15,000, covering important emission lines in the optical for studying the ionized gas in the Milky Way and beyond. It will be enabled by a significant reduction in the cost of each spectrograph unit. Through massive replication, we can significantly exceed the survey speed of traditional spectrographs under similar total cost. The prototype system will include six spectrographs paired with 3 small telescopes, deployed at sites on both hemispheres. I will present the design and development progress.

Biography:

Prof. Renbin Yan got his bachelor degree from Peking University and his PhD from University of California at Berkeley. After that, he was a postdoctoral scholar at the University of Toronto and New York University. In 2012, he joined the faculty at the University of Kentucky and was tenured in 2018. In 2021, he joined the Chinese University of Hong Kong and was awarded the title of Global STEM Scholar. Prof. Yan's research interest includes the astrophysics of the interstellar medium, stellar population, and astronomical instrumentation. He is experienced at conducting large spectroscopy surveys. He is the survey scientist of the SDSS-IV/MaNGA project, which is the largest integral field spectroscopy survey of galaxies to date, providing data for 10,010 unique galaxies. He also leads the MaNGA Stellar Library project, which is the largest and most-comprehensive stellar library to date. Recently, he is starting a new astronomical instrumentation project to build instruments for the next generation spectroscopy surveys.

Astronomy and Astrophysics Division
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