Astronomy Seminar

Dr. Gang Li

(KU Leuven)

Title: Probing Stellar Interior Structures with Asteroseismology: A Comprehensive Study of Magnetic Fields, Rotation, and Age

Speaker: Time: 10:00-11:00, 3 Jan (Friday), Shanghai time

Host: Fabo Feng

Location: N600

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Meeting ID: 568274144 (no password)

Abstract:

Probing Stellar Interior Structures with Asteroseismology: A Comprehensive Study of Magnetic Fields, Rotation, and Age

Asteroseismology is currently the only method capable of directly probing the internal structures of stars, gaining unprecedented vitality in the era of space-based photometry. Stellar interiors host various types of oscillation waves that, as they propagate through different depths, are modulated by local physical conditions, leading to different frequency shifts. By precisely observing these frequency shifts, we can uncover physical properties of stellar interiors.

This report focuses on the speaker's recent work, divided into three main parts: (1) measuring the magnetic field strength at the cores of red giant stars using asteroseismology, (2) investigating the internal rotational evolution from main-sequence stars to red giants, and (3) using asteroseismology to measure stellar ages in star clusters. These studies span multiple astronomical research domains, from main-sequence to red giant stars, angular momentum transfer to core magnetic fields, and single stars to star clusters. They not only deepen our understanding of stellar physics but also expand the horizons of asteroseismology into broader fields.

Biography:

Gang Li graduated with a bachelor's degree from the Department of Astronomy at Beijing Normal University in 2016 and obtained his Ph.D. from the University of Sydney in 2020. He has conducted postdoctoral research at the Institute of research in astrophysics and Planetology (IRAP) in Toulouse, France, and at KU Leuven in Belgium. His research focuses on asteroseismology, with a particular emphasis on exploring stellar internal rotation, core magnetic fields, and collaborative studies between star clusters and asteroseismology.

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