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Fast Radio Bursts: the CHIME Revolution

Thursday, 11 July 2024 15:00 (30 minutes)

Fast radio bursts (FRBs) are enigmatic millisecond-duration pulses of radio light observed across cosmological distances. Their origins and emission mechanisms remain unclear, making FRBs one of the most intriguing new mysteries in astrophysics. The Canadian Hydrogen Intensity Mapping Experiment (CHIME), with its specialized real-time transient-search engine (CHIME/FRB), has emerged as the leading facility for FRB detection, revolutionizing the field unprecedented detection rates and increasing the known sample by an order of magnitude. This extensive new sample has already enabled detailed studies of the statistical properties of the FRB population as well as of individual events with unique characteristics. We are currently enhancing CHIME's capabilities to include very-long-baseline interferometry (VLBI) through the CHIME/FRB Outriggers program. This large-scale initiative aims to deploy CHIME-like outrigger telescopes at continental baseline distances, working in tandem with CHIME to precisely pinpoint FRB locations using VLBI. This precision is essential for identifying host galaxies, studying source environments, and enabling the use of FRBs as cosmological probes. In this talk, I will provide an overview of CHIME/FRB's most recent results, present the CHIME/FRB Outriggers program, and report on its status.

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