ICTS Astrophysics & Relativity Seminar

Title : Fast radio bursts: source properties, emission mechanism and cosmological applications

Speaker : Mukul Bhattacharya (University of Wisconsin-Madison, USA)

Date : Monday, 20 January 2025

Time : 10:30 AM (IST)

Abstract : Fast radio bursts (FRBs) are energetic millisecond duration pulses, located at cosmological distances, whose physical origin is still unresolved. Detection of a Galactic FRB in April 2020 suggested that some FRBs can originate from magnetars. Characterizing FRB source population will optimize future search strategies and provide valuable insights regarding progenitor models. In this talk, I will first describe a generalized framework utilized to constrain properties of FRB source and host galaxy directly from multi-band radio observations. Next, I will discuss the mechanism for production of coherent radio bursts that are likely accompanied by persistent radio emission originating from magnetar wind nebula. Such late-time emission has been detected for three localized FRBs, and provide direct constraints on the NS age and magnetic field. Lastly, I will discuss how cosmological FRBs can be used as potential probes to investigate He reionization history and can help reveal energetic processes in the early Universe.

Venue : Online
Zoom Link: https://icts-res-in.zoom.us/j/99531530594?pwd=F3Fbnw42ifLF0i57lmbm4f5ft6hqho.1
Meeting ID: 995 3153 0594
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