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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

## **ICTS Astrophysics & Relativity Seminar**

- Title** : Deciphering Enigmatic Neutron Stars: Where Ultra-dense Matter Meets Strong-field Gravity
- Speaker** : Arunava Mukherjee (Saha Institute of Nuclear Physics, Kolkata)
- Date** : Thursday, 23 October 2025
- Time** : 3:30 PM (IST)
- Abstract** : Neutron stars are the densest objects found in nature. Matter in its interior remains in an extreme exotic condition that is radically different from other objects in the universe. All four fundamental forces in nature play significant roles in shaping the structure and composition of these enigmatic objects. This fact makes it an ideal test-bed to gauge the domain of validity of the fundamental interactions in nature. In this talk, I will depict a broad-brush picture of a microscopic model for neutron star equation of state, its structure and compositions, along with briefly highlighting some of the key EM and GW observational constraints that have already been achieved. I will conclude this talk by summarizing some of the challenges and opportunities to further enrich our knowledge of these extreme objects from transient and persistent signals of multi-messenger observations in the future.
- Venue** : Feynman Lecture Hall
- Zoom Link: <https://icts-res-in.zoom.us/j/96180627784?pwd=pVmmYz6XgChaTGRxSAHPOjUC5rTkkl.1>
- Meeting ID: 961 8062 7784
- Passcode: 232425