



IUCAA

4TH INTERNATIONAL WORKSHOP ON NUCLEAR THEORY: EDUCATIONAL SEMINARS

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SELÇUK UNIVERSITY, PHYSICS DEPARTMENT, KONYA, TÜRKİYE

Unravelling the interior of Neutron Stars with Gravitational Waves

INVITED SPEAKER

Prof. Debarati Chatterjee

Chair of LIGO-India Education and Public Outreach
Inter-University Centre for Astronomy and Astrophysics, India

Neutron Stars are natural laboratories for studying Fundamental Physics under extreme conditions. The ultra-high densities in their core surpass those of nuclear and heavy-ion laboratories and provide an ideal environment to study properties of dense matter complementary to terrestrial experiments. It is conjectured that strange matter, whose hints are seen in particle accelerators, or even dark matter could exist in the core of neutron stars. Their presence in the stellar interior could affect observable properties of neutron stars, and their understanding is crucial for the correct interpretation of data. Over the past decades, multi-wavelength astronomy has provided us with a wealth of information about these compact objects. However, the recent detection of Gravitational Waves from Neutron Stars has opened up a new window of possibility to directly investigate their interior. In this talk, I will illustrate how Gravitational Wave astronomy is revolutionising our understanding of dense matter.

Prof. Debarati Chatterjee is a theoretical astrophysicist with an expertise in analytical and numerical description of compact stars (neutron stars and white dwarfs). Her main interests are in developing global models which take into account both microscopic (involving interdisciplinary physics such as nuclear and particle physics, superconductivity) and macroscopic aspects (magnetic fields, relativity) consistently in order to improve **astrophysical** simulations and for better interpretation of multi-messenger astrophysical observations.



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Chair: Nihal BÜYÜKÇIZMECI

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