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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Seminar

Title : Exploring the Gravitational Universe with LIGO and Torsion-Balance Experiments

Speaker : Krishna Venkateswara, University of Washington, USA

Date : Thursday, September 21, 2017

Time : 2:00 PM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : Gravity is central to many of the puzzles in modern physics such as Dark Energy, Dark Matter, and the Early Universe. Gravitational-wave astronomy with compact binary mergers, supernovae, and other sources with LIGO, and precision experiments with Torsion-Balances can provide answers to these mysteries and pave the way to a better understanding of our universe. In the first part of my talk, I will describe the LIGO detectors and the unique gravitational-wave science they are enabling. I will focus on an important subsystem, the active seismic isolation system, which I helped improve using ultra-sensitive ground-rotation sensors developed at the Univ. of Washington. In the later part of my talk, I will describe some of the Torsion-Balance experiments being done at UW, focusing on two which can improve the search for short range violations of the inverse square law or spin-coupled forces, and recently proposed ultra-light bosonic dark matter.