

ICTS Postdoc/Graduate Student Seminar Series

Title : Gravitational wave multi-detector schemes for compact binary coalescence search

Speaker : Haris M. K, ICTS-TIFR, Bangalore

Date : Friday, April 28, 2017

Time : 11:15 AM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : The observation of two binary black hole mergers by the Advanced LIGO detectors has opened a new observational window onto our universe. The inclusion of additional advanced interferometers located in different continents (e.g., Virgo, KAGRA and LIGO-India) will provide additional information like the location of the source and the polarization of the incoming gravitational wave signal. Gravitational waves from the coalescences of compact binaries composed of neutron stars and/or black holes are prominent sources for such an interferometer network. These systems are well-modelled, so a special phase matching technique - matched filtering - is used to extract the known (weak) signals from noisy data. If the noise is Gaussian, this is equivalent to constructing a likelihood ratio statistic. I will discuss three different multi-detector likelihood-ratio-based gravitational wave search schemes for compact binary sources and compare their performance on simulated data for different possible advanced interferometer network configurations.

Note: This will be an ongoing biweekly seminar series (Fridays, 11:15 am) by the ICTS postdocs and graduate students