ICTS Postdoc/Graduate Student Seminar Series

Title : Accurate inspiral-merger-ringdown gravitational waveforms for non-spinning black-hole binaries including the effect of subdominant modes

Speaker : Ajit Kumar Mehta, ICTS-TIFR, Bangalore

Date : Friday, March 16, 2018

Time : 11:15 AM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Here, I will discuss about the importance of higher modes in the modelling of gravitational waves. I will show how to construct an analytical waveform family describing gravitational waves from the inspiral, merger and ringdown of non-spinning black-hole binaries including the effect of several non-quadrupole modes [(l = 2, m = ±1), (l = 3, m = ±3), (l = 4, m = ±4) apart from (l = 2, m= ±2)]. The waveform family is constructed in frequency domain by modelling the Fourier transform of the hybrid waveforms making use of analytical functions inspired by perturbative calculations. The resulting highly accurate, ready-to-use waveforms are highly faithful for observation of GWs from non-spinning black hole binaries and are extremely inexpensive to generate. At the end, I will discuss a little bit about the effect of mode mixing in modelling (l = 3, m = ±2) mode and a test of General Relativity that is based on checking the consistency between different modes of the radiation.

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