

ICTS Seminar

- Title** : Modelling binary systems of compact objects: the fourth-order post-Newtonian dynamics
- Speaker** : Guillaume Faye, Institut d'astrophysique de Paris, France
- Date** : Tuesday, March 6, 2018
- Time** : 3:30 PM
- Venue** : Madhava Lecture Hall, ICTS Campus, Bangalore
- Abstract** : The post-Newtonian (PN) approximation is a small-velocity perturbation scheme, extensively used to model the evolution of slowly moving isolated systems in general relativity. It is valid in the system near zone, a region that contains the source but is much smaller in size than its typical radiation wavelength. The PN gravitational field is matched, in vacuum, with the most general multipolar post-Minkowskian solution for the metric. This approach is appropriate to determine analytically the waveform produced by an inspiraling binary of compact objects. In order to improve the quality of templates used in data analysis, we recently achieved the computation of a 4PN Fokker Lagrangian for two point masses, treating all field divergences by means of dimensional regularisation. At this order, there appears a non-local-in-time contribution to the action, due to the interaction of the source with the linear waves coming from its own radiation.