Applied and Computational Mathematics Seminar

Title: Tailoring an effective-one-body waveform model to extreme-mass-ratio inspirals

Speaker: Angelica Albertini (Charles University)

Date: Wed 29th November 2023 at 11:00AM

Location: G87 Block B - Newstead

Abstract: The effective-one-body (EOB) formalism is an approach to the two-body problem in general relativity that allows to find an approximate solution to the evolution of compact binary coalescences and to evaluate the emitted gravitational waveform. This formalism is at the core of various waveform models for comparable-mass binaries that are exploited for detection and parameter estimation by the currently operating interferometers. The planned next-generation detectors will however be able to receive signals from a wider collection of sources, among which are extreme-mass-ratio inspirals (EMRIs), namely systems in which a stellar-mass compact object orbits a super massive black hole. After briefly introducing the structure of the EOB formalism, I will discuss the ongoing efforts in extending the validity of the EOB model TEOBResumS beyond the comparable-mass regime, so as to successfully model the waveform emitted by EMRIs.