Contribution ID: 100 Type: not specified

## Waveform modelling for extreme and intermediate mass-ratio inspirals using a multi-scale self-force approach

Wednesday, 18 September 2024 09:00 (50 minutes)

The calculation of gravitational wave templates for binaries with disparate masses can be achieved using a (small mass ratio) perturbative expansion. This "self-force" approach was recently pushed to second-order (in the mass ratio) which has enabled the modelling of a wide class of binaries with mass ratios ranging  $\sim 10^{5}:1$  to  $\sim 30:1$ . Furthermore, by employing a multi-scale expansion the associated gravitational waveforms can be directly computed on sub-second timescales without the need for any further waveform acceleration. In this talk I will review the multi-scale self-force approach and outline the ongoing program to extend current calculations to cover the full precessing and eccentric parameter space

Presenter: WARBURTON, Niels (UCD)