Contribution ID: **57** Type: **Contributed Talk**

Shaken, not stirred: test particles in binary black hole mergers.

Tuesday 11 October 2022 15:15 (15 minutes)

In light of the recent detections of multiple gravitational-wave events, originating from both neutron-star and binary-black-hole mergers, we simulate the dynamics of ambient test particles in the gravitational potential well of a BBH system close to its inspiral phase with the goal of simulating the associated electromagnetic radiation and resulting spectral energy density distribution of such a BBH system. This could shed light on possible detection ranges of electromagnetic counterparts to BBH mergers. The potentials are numerically calculated using embedded adaptive time step Runge Kutta methods, under the assumption of non-rotating black holes with the post-Newtonian Paczynski-Wiita potential approximation in tandem with retarded time concepts analogous to electrodynamics. We find that the frequencies of potential electromagnetic radiation produced by these systems drop off at 10ˆ6Hz.

Track

Binaries

Author: VAN DER MERWE, Pieter

Co-author: BOETTCHER, Markus (North-West University)

Presenter: VAN DER MERWE, Pieter

Session Classification: Parallel 4