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

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In 2015 gravitational wave event GW150914 was detected by the advanced Laser Interferometer Gravitational-wave Observatory (aLIGO), with a possible weak transient electromagnetic counterpart GW150914-GBM detected by the Fermi Gamma-ray Burst Monitor (GBM) 0.4s after the detection of the gravitational wave signal. In light of these detections we simulate the dynamics of test particles in the gravitational potential well of a binary black hole close to its merging phase with the eventual end goal of simulating the associated electromagnetic radiation in binary black hole systems, as this could shed light on binary black hole systems as high-energy accelerators and possible electromagnetic counterparts of binary black hole mergers. The potentials are numerically calculated using finite difference methods, under the assumption of non-rotating black holes with the post-Newtonian Paczynski-Wiita potential approximation.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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