

A. Albertini: Towards an effective-one-body model for extreme-mass-ratio inspirals

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The effective-one-body (EOB) approach is based on a mapping between the two-body problem in GR and the motion of a single body in an effective metric. This approach already efficiently provides templates for the comparable-mass compact binary coalescences observed by the LVK collaboration, but is also flexible enough to reach a wider coverage of the parameter space. If for comparable-mass binaries EOB models have been tuned and benchmarked with respect to numerical relativity simulations, when going to higher mass ratios it is natural to use gravitational-self-force (GSF) results as a benchmark. We thus present a comparison of EOB and GSF waveforms for quasi-circular nonspinning binaries for a set of intermediate to extreme mass ratios, and show how by some simple yet impactful modifications, the EOB model can successfully match the GSF one. We then discuss the next relevant features to be added to the model, from the inclusion of a spinning secondary to environmental effects.