

The 4PN phase of non-spinning compact objects: where are we ?

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The new generation of gravitational wave detectors, such as LISA, requires to have precise analytical models for gravitational wave form. These models are useful for data analysis, tests on alternative theories of gravity and comparison with numerical relativity. To this day, we know the full GW phase for non-spinning compact binary systems at the 3.5 post-Newtonian (PN) order. We now push the computation to the 4PN order. The calculation involves challenging technical issues associated with the point-mass regularization and appearance of infra-red divergences, non-linear tail effects and the large amount of calculation involved. I will make a brief overview of what has been done so far and what is left to do.

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