

Gravitational waves and the problem of motion in GR

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The LIGO/VIRGO collaboration reported recently the observation of gravitational waves from the coalescence of black-hole binary systems. Both analytic works on the two-body problem in GR and extensive numerical relativity calculations play a very important role when interpreting and deciphering the gravitational-wave signals. In this talk we shall review the current state of the art on post-Newtonian methods as applied to the motion and gravitational radiation of compact binary systems. In particular we shall discuss the recent progress on equations of motion at the 4PN order.