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The Two-Body Problem in General Relativity

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The two-body problem has a long history in General Relativity. It has recently acquired a renewed practical importance in view of the development of interferometric detectors of gravitational waves. Indeed, a network of ground-based interferometric gravitational wave detectors (LIGO/VIRGO...) is currently being upgraded, and should, in a few years, reach a sensitivity enabling them to detect the gravitational waves emitted by coalescing compact binaries: i.e. binary systems made of black holes and/or neutron stars. This prospect has motivated renewed theoretical studies of the motion and radiation of relativistic two-body systems. I will review the recent analytical studies of (comparable-mass) two-body systems, and their comparison to numerical relativity results. Particular attention will be given to the recently developed "effective one body" approach to the motion and radiation of binary systems.