

Black hole mergers and gravitational waves

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Abstract

The broad scope of these lectures is to introduce the basic elements which are necessary to understand the GW signals from a BH binary merger recently-observed by LIGO, and to provide the basis of some state-of-the-art applications in this rapidly-growing field.

Content:

1. A GW physics primer.
2. Introduction to the post-Newtonian formalism. The case of circular inspiral.
3. Black-hole perturbations and quasinormal modes (QNMs)
4. GWs from a radial plunge of a test particle into a black hole: QNM ringing
5. Black-hole spectroscopy: tests of gravity and of near-horizon physics
6. Numerical Relativity and Effective-One-Body (EOB) approach

References

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