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Analytical Approaches to Coalescing Binary Black Holes

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The rationale for interpreting the recently announced events
of the Laser Interferometer Gravitational-Wave Observatory (LIGO) as gravitational wave (GW) signals emitted during the coalescence of two black holes is the excellent match between these events and the corresponding theoretical predictions within General Relativity. We shall review the mix of analytical and numerical methods that led to predict in advance the precise shape of the waveform emitted by coalescing binary black holes. In particular, we shall present the basis of the Effective One-Body method which has been crucial in allowing one to compute the bank of 250 000 GW templates that has been used to search coalescence signals, and to measure the masses and spins of the coalescing black holes.

Summary

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