

IBP for gravitational wave physics

Thursday, 29 October 2020 05:00 (1 hour)

We describe the calculations of multi-loop scattering amplitudes in the context of binary black hole dynamics. The method of regions is used to expand the amplitudes in the limit of small \hbar . The expansion reduces the number of dimensionless kinematic variables from 3 to 1, which dramatically speeds up the subsequent IBP reduction, allowing us to calculate the 3-loop conservative dynamics of binary black holes. Additionally, Using reverse unitarity, phase space integrals for graviton emissions are treated like loop integrals using standard techniques like IBP and differential equations, allowing us to obtain analytic results for energy loss in black hole scattering.

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Session Classification: 积分约化