

Gravitational Wave Tails from Soft Theorem

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Abstract:

If a set of massive objects collide in space and the fragments disperse, possibly forming black holes, then this process will emit gravitational waves. Computing the detailed gravitational wave-form associated with this process is a complicated problem, not only due to the non-linearity of gravity but also due to the fact that during the collision and subsequent fragmentation the objects could undergo complicated non-gravitational interactions. Nevertheless the classical soft graviton theorem determines the power law fall-off of the wave-form at late and early times, including logarithmic corrections, in terms of only the momenta of the incoming and outgoing objects without any reference to what transpired during the collision. In this talk I shall explain the results.
