

Bollettino Settimanale

Lunedì 22 aprile 2024	Martedì 23 aprile 2024	Mercoledì 24 aprile 2024	Giovedì 25 aprile 2024	Venerdì 26 aprile 2024
<div><div>AULA CONVERSI ore 14.30</div><div>SEMINARIO INFN</div><div><div>An eikonal approach to gravitational scattering and waveforms.</div><div>Carlo Heissenberg (Queen Mary University of London)</div><div>The classical limit of scattering amplitudes offers a convenient strategy to calculate gravitational-wave observables for binary processes in the post-Minkowskian (PM) regime, in which the two objects are far apart and interact weakly. In this talk, I will discuss how the eikonal exponentiation offers a simple and conceptually transparent framework to exploit this connection and calculate key gravitational observables from amplitudes: the deflection angle for hyperbolic encounters, energy and angular momentum losses, as well as the emitted gravitational waveform itself. The latter emerges in particular from the 2-to-3 amplitude for the scattering of two massive scalars and the emission of a graviton. I will briefly illustrate the calculation of its one-loop contribution, which is the key ingredient to calculate the first PM correction to the classic result obtained by Kovacs and Thorne in the 70s. Moreover, I will show how the choice of asymptotic (BMS) frame is crucial in order to compare the resulting amplitude-based waveform with predictions from soft theorems and from the post-Newtonian (PN) formalism, in the soft and small-velocity limits, finding agreement up to 3PN order.</div></div></div>				