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CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES
CENTER FOR R&D IN MATHEMATICS AND
APPLICATIONS

Gravitational Geometry and Dynamics Group Seminar

Wed. 1st March '23 Online at 11h00

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Deutsches Elektronen-Synchrotron
DESY

Zoom meeting ID 962 2413 8340

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Post-Newtonian waveform: a state of the art

Analytical predictions of the gravitational waveform (amplitude and phasing) are key ingredients for building the templates used in gravitational detectors. Among the existing frameworks, the "post-Newtonian" approximation (expansion in small-velocity and weak-field) is particularly well suited to describe the inspiral phase (early stage) of the emission of binaries made of compact objects (such as black holes or neutron stars). Nowadays, the predictions of such framework have been pushed to extremely high accuracy, that will be crucial for the data analysis of the next generation of detectors.

Indeed, for non-spinning binaries, we are currently at the edge of the fourth post-Newtonian prediction, ie. the $(v/c)^8$ correction beyond the leading order. I will review the path towards this result, and advertise the last few remaining steps. Beyond the non-spinning limit, tremendous efforts have been recently deployed to include physical effects (such as spins or finite-size effects), that will be presented.

[https://videoconfcolibri.zoom.us/j/96224138340?](https://videoconfcolibri.zoom.us/j/96224138340)

[pwd=YkZUMGIb0dqVjcxOVpXMTFVMTBxQT09](https://videoconfcolibri.zoom.us/j/96224138340?pwd=YkZUMGIb0dqVjcxOVpXMTFVMTBxQT09)

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