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

universidade de aveiro

Gravitational Geometry and Dynamics Group Seminar

Tue., November 12, 2024, at 11h00.

Room: Online only and **Zoom ID:** 955 4130 8539

(*Password: contact jnicoules@ua.pt*)

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More about *Gr*⊙*v*

at: *gravitation.web.ua.pt*

New post-Newtonian results for compact binaries in general relativity and scalar-tensor theories

In the first part of my talk, I give on overview of some recent results concerning the two-body problem in general relativity at high post-Newtonian (PN) order. I will present the energy flux at 4.5PN order, the equations of motion at 4.5PN order, and the memory contributions to the 3.5PN order waveform. In particular, I will discuss some subtleties about the definition of the center-of-mass frame, and its relevance to the comparison with second-order self-force (2SF) results. In the second part of my talk, I will discuss recent work on compact binaries on eccentric orbits in scalar-tensor theory. I will discuss how I obtain the quasi-Keplerian motion at 2PN and the fluxes of energy and angular momentum at 1.5PN (i.e. 2.5PN beyond the leading dipolar radiation), which finally lead to the secular evolution of the orbital elements. I discuss subtleties in the treatment of hereditary terms (such as the tails and the memory), and highlight the usefulness of studying these theories to better understand general relativity.

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