

Talk 3 - David Trestini (IAP)

vendredi 13 octobre 2023 13:30 (45 minutes)

Gravitational waves in scalar-tensor theory at 1.5PN order beyond Einstein's quadrupole formula.

With future gravitational wave (GW) detectors such as the Einstein Telescope and LISA, we expect to detect many more GW signals coming from neutron star binaries, and with increased accuracy. In this talk, I will present recent results around gravitational waveforms in massless scalar-tensor (ST) theories of gravity. Due to no-hair theorems that hold in these theories, it is expected that the GW emission of binary black holes does not deviate from GR. However, in neutron star-black hole and binary neutron star systems, dipolar radiation can appear, and non-linearities appear at lower orders. In this work, using multipolar post-Minkowskian (M-PM) and post-Newtonian (PN) formalisms, we computed ready-to-use templates for gravitational and scalar waves generated by compact binary systems in ST theories to 1.5PN beyond the GR quadrupole radiation. We computed observables such as the flux, the phase and the spherical harmonic modes, and compared our result to existing literature.