

Tests of general relativity and cosmology with gravitational from binary neutron stars

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Since the detection of the binary neutron star merger GW170817, gravitational waves (GWs) are rapidly entering in the field of cosmology. In this talk I will discuss how GWs can be used to probe deviations from General Relativity (GR) on cosmological scales. In particular I will focus on a modified GW friction term and a modified dispersion relation, while at the same time leaving the Hubble constant as a free parameter. Using a statistical method able to combine measurements of GWs as well as their electromagnetic counterpart and hosting galaxy, I will present novel constraints on the Hubble constant and the GW friction and dispersion terms. I will show that it is fundamental to consider jointly the measurements of these 3 parameters in order to avoid a biased measurement of one of the three. Finally I will present the results from GW170817, leading to updated and tighter upper-limits on GR modifications.

Author: Dr MASTROGIOVANNI, Simone (Astroparticule et cosmologie, Paris Diderot university)

Orateur: Dr MASTROGIOVANNI, Simone (Astroparticule et cosmologie, Paris Diderot university)

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