Contribution ID: **6** Type: **not specified**

The search for continuous gravitational waves in LIGO and Virgo detectors: methods, recent results and perspectives

Friday 19 November 2021 11:00 (1 hour)

Continuous gravitational waves (CWs) are emitted by sources with a mass quadrupole moment varying in time in a periodic or nearly-periodic manner. The emission of CWs is expected from spinning neutron stars, if asymmetric with respect to the rotation axis, or by more exotic sources, like those involving ultra-light bosons, which could be a component of dark matter. CWs have not been detected so far, due to their weakness with respect to the well-known coalescing compact binaries, and are subject of intense research worldwide. Given their persistent nature, the detection of CWs would revolutionise gravitational wave astronomy, providing a true "laboratory"for astrophysics and fundamental physics. In this lecture, I will discuss some expected astrophysical sources of CWs, I will present the main data analysis techniques used for their search, the most relevant results obtained so far in the analysis of LIGO and Virgo data, and their astrophysical interpretation. I will conclude with future perspectives in this field.

Presenter: Dr PALOMBA, Cristiano

Session Classification: Present and future of neutron star physics using gravitational waves