

## Gravitational waves and multi-messenger astronomy: results and prospects

*Thursday, 13 January 2022 09:00 (40 minutes)*

The era of Gravitational Wave (GW) Astronomy started on 2015, with the first observation of GWs from the merger of a binary black hole (BBH) system by Advanced LIGO. Two years later, the detection of GWs from a binary neutron star (BNS) merger by the Advanced LIGO and Advanced Virgo network and of the associated electromagnetic (EM) signals marked the birth of multi-messenger astronomy with GWs, opening a new chapter in the study of the universe. Besides these two ground-breaking discoveries, the LIGO, Virgo and KAGRA collaborations reported the detection of many other GW events during the first three observing runs and, thanks to their increasing sensitivity, more GW and joint GW and EM detections are expected in the near future. This talk will give an overview of the GW and multi-messenger observations so far, their astrophysical implications and the prospects for the upcoming years.

**Primary author:** PATRICELLI, Barbara (EGO and INFN - Sezione di Pisa)

**Presenter:** PATRICELLI, Barbara (EGO and INFN - Sezione di Pisa)

**Session Classification:** Gravitational waves