Multi-Messenger Astronomy from Space

Specific Seminar – Curriculum 1

May 31, 2023, 4 p.m.

Speaker:

Prof.ssa Eleonora Troja, Department of Physics, Tor Vergata University of Rome

Abstract:

The first direct detection of gravitational waves (GWs) from a pair of coalescing black holes (BHs) was a transformational event, which opened up new horizons in the exploration of the universe. Since then, dozens of GW sources have been discovered, providing unique access to the properties of gravity in the strong-field regime and fundamental new insights into stellar evolution. However, as spectacularly demonstrated by the discovery of GW170817, the true power of GWs is fully unlocked only when combined with electromagnetic (EM) observations, that is multi-messenger astrophysics. The combination of GW and EM signals enables multidisciplinary studies encompassing key fields of modern astronomy: from the cosmic production of heavy metals to the rate of expansion of our universe and the behaviour of dense matter in extreme physical conditions. The next few years will likely see a few joint detections of GWs and EM radiation, opening new frontiers across many areas of science. This talk will review the promises, challenges and future perspectives of illuminating GWs with light.

Online attendance:

https://unitn.zoom.us/j/83140177196?pwd=cVdZTG9ITHQ5Q1c0MENWZ1VPQlJRQT09

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