Contribution ID: **15** Type: **not specified**

Phenomenology: Detection and measurement prospects at the Einstein Telescope: forecasts with GWFAST

Monday, September 4, 2023 2:00 PM (30 minutes)

The detection of gravitational waves in 2015, thanks to the LIGO and Virgo interferometers, opened a new window on our Universe. The discoveries during the first three observing runs already had an extraordinary impact on both astrophysics, cosmology, and fundamental physics.

The GW community is now looking at the next long–prepared step: 'third–generation' detectors. Thanks to an increase of more than one order of magnitude in sensitivity and a larger bandwidth, Einstein Telescope (ET) and Cosmic Explorer (CE) will have an outstanding potential, capable of triggering fundamental discoveries.

Assessing the capabilities of these extraordinary instruments, which can detect hundreds of thousands of sources per year, is a crucial aspect to make informed decisions. In this talk, after a general overview, I will present recent results of the capabilities of ET alone, and a network made by ET and two CE detectors, obtained using the GWFAST code and focusing in particular on the accuracy in the reconstruction of the parameters of both binary black hole, binary neutron star and neutron star–black hole systems. If time allows, I will further focus on the prospects at ET for more specific science cases, namely high redshift sources and nuclear physics.

Presenter: IACOVELLI, Francesco (University of Geneva)

Session Classification: Parallel Sessions