Contribution ID: **2** Type: **Talk**

Seismic and Newtonian noise in underground GW detectors.

Wednesday, 10 November 2021 09:30 (30 minutes)

Gravitational-wave detectors are very sensitive instruments that suffer from a huge number of noises. If we aim to observe gravitational waves with Earth-based detectors, we need to take care of every source that can prevent that observation.
Seismic noise is a huge problem in the low frequency band and it is tackled with suspensions and active controls. The low frequency band can also be threatened by the so-called Newtonian noise, generated by the fluctuations of the gravity field. If this has not been a problem in the first generation gravitational-wave detectors, it will be so in the next runs and especially in the third-generation detectors, like the Einstein Telescope. We need then to be prepared to suppress as much as possible these noises, otherwise they might become the last wall for the sensitivity of the GW detectors.
This talk will explore environmental noises with a particular detail on Newtonian and seismic noise and the techniques that we can employ to reduce their effects.

Primary author: BADARACCO, Francesca (GSSI)

Presenter: BADARACCO, Francesca (GSSI)

Session Classification: Newton Noise Studies