

Seismic noises and earthquakes impact on the Virgo gravitational-wave detector during the O3 run (04/2019 – 03/2020)

Ground-based interferometric gravitational-wave detectors like Virgo have been designed to be as shielded as possible from the external environment in general and seismic vibrations in particular. Yet, ground motion is impacting these instruments: on long timescales by modulating their sensitivity and data quality depending on the variation of seismic noise levels; and in a more sudden way when seismic waves from a strong-enough earthquake could cause control losses – hence reducing their duty cycles. This talk will present the results of dedicated studies based on the 11 months of data collected by the Virgo detector during the LIGO-Virgo Observation Run 3 (O3 run), that started on April 1st, 2019 and ended on March 27th, 2020.