

Title: *WIENER FILTERING METHOD APPLIED TO VIRGO WEST END BUILDING SEISMOMETER ARRAY*

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At low frequencies, below about 20 Hz, the Newtonian noise (NN) affects the sensitivity curve of Advanced LIGO and Virgo detectors and turns to be limiting noise source for future detectors sensitive, as well[1] [2]. There are two main components of NN: the atmosphere NN and the seismic NN. The latter turns to be dominant NN contribution, although recent measurements at Virgo show that the atmosphere can be significant as well[3].

The first approach to mitigate seismic NN is using Wiener filtering. It is derived from correlation between sensors monitoring surface displacements. In this talk, I will present the results of Wiener filter investigation using seismic data from array deployed at West End building (WEB) of Virgo interferometer.

References

[1] J. Harms et al., *Low-frequency terrestrial gravitational-wave detectors*. Phys. Rev. D, 88 (122003), December 2013.

[2] J. C. Driggers et al., *Subtraction of Newtonian noise using optimized sensor arrays*. Phys. Rev. D, 86(102001), November 2012.

[3] D. Fioriucci et al., *Impact of infrasound atmospheric noise on gravity detectors used for astrophysical and geophysical application*. Phys. Rev. D, 97, 062003 (2018)