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# Towards a more realistic Seismometer Position Optimization for Newtonian Noise Mitigation

At the Einstein Telescope, Newtonian noise is expected to be the dominant noise for low frequencies. Its impact is proposed to be reduced with the help of an array of seismometers that will be placed around the interferometer endpoints. As boreholes for seismometers are expensive, their positions should be optimized. Up to now this was done based on an analytical calculation that makes simplifying assumptions.
We have developed a three-dimensional simulation of seismic waves and their effect on a single test mass. It also simulates the displacement measured by arbitrarily placed seismometers. Given the Newtonian noise at the mirror and the seismometer displacement, their positions are optimized based on the Wiener filter. With this simulation, some of the assumptions of the analytical calculation can be lifted, as we move towards a more realistic optimization of seismometer positions for Newtonian noise cancellation.

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