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Bayesian ML algorithm for array optimization

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Newtonian noise (NN) will be the very last sensitivity wall in GW detectors below 10-30 Hz. A NN cancellation system is already foreseen in Virgo for O4. For cancelling this noise, we need arrays of seismic sensors deployed in an optimal way close to the test masses. However, when the seismic field deviates from homogeneity and isotropy, finding the optimal array becomes very challenging. An algorithm has been developed to deal with this issue in Virgo and it exploits Gaussian processes. Designing the optimal array for ET will be even more challenging since we will need seismic data which are expensive to collect in an underground environment: we then need to face these issues with new tools.

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