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FraNC: A Framework for (Newtonian) Noise Cancellation

Predicting specific noise realizations from witness sensors will be an essential technique to improve the sensitivity of the Einstein Telescope. Different techniques, like classical or deep learning filters, can be employed to reduce the Newtonian noise level. We are presenting a Python framework that automates the evaluation of multiple noise cancellation techniques on a set of simulated or measured recordings. The framework includes implementations of common prediction techniques, such as the Wiener and LMS filter, with a common interface. Additional techniques can be added through simple Python wrappers, and evaluation metrics can be added in a similar manner. We plan to add examples for the wrapping deep learning techniques in the future. Using a framework ensures a fair evaluation of the methods. Thus, the framework can help to develop and identify best-performing methods for a given problem.

Project link: https://github.com/NewtonianNoise/FraNC

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