

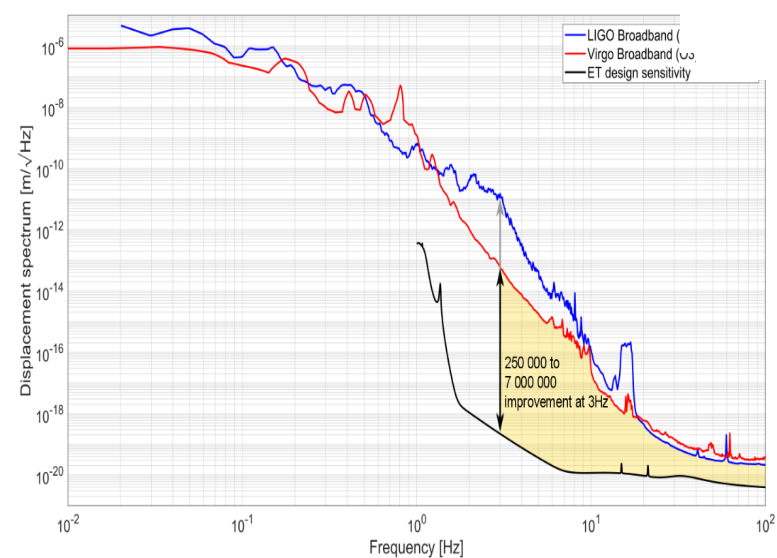
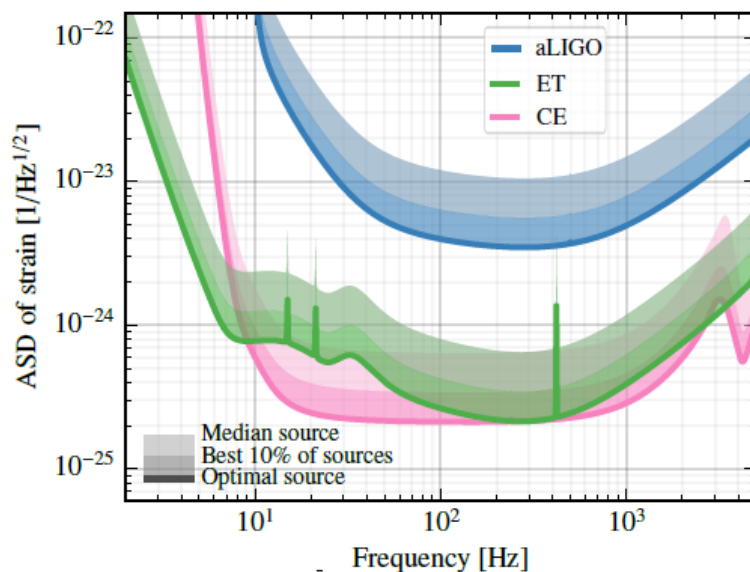
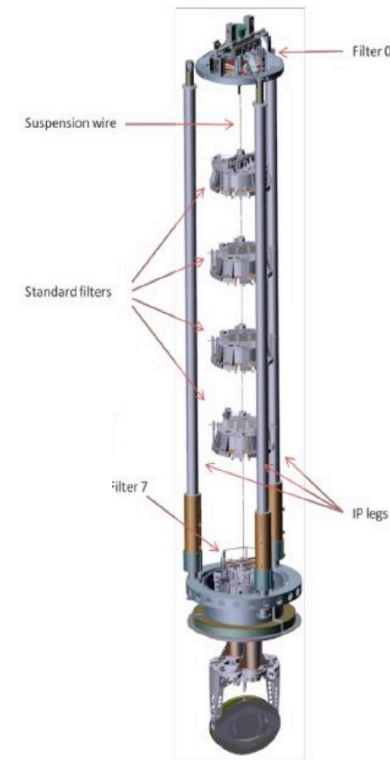
NGSA

New Generation SuperAttenuator

by Davide Rozza

Obiettivi generali

- Development of a new vibration isolation system (Super-Attenuator) for the mirrors of the ET antenna
 - ❑ Improve the current GW Detector sensitivity by more than one order of magnitude extending the detection band to the low frequency, down to 2-3 Hz
 - ❑ The ET design sensitivity requires an improvement by a factor 10^5 around 2-3 Hz with respect to the present Virgo sensitivity



Attività 2022-2023

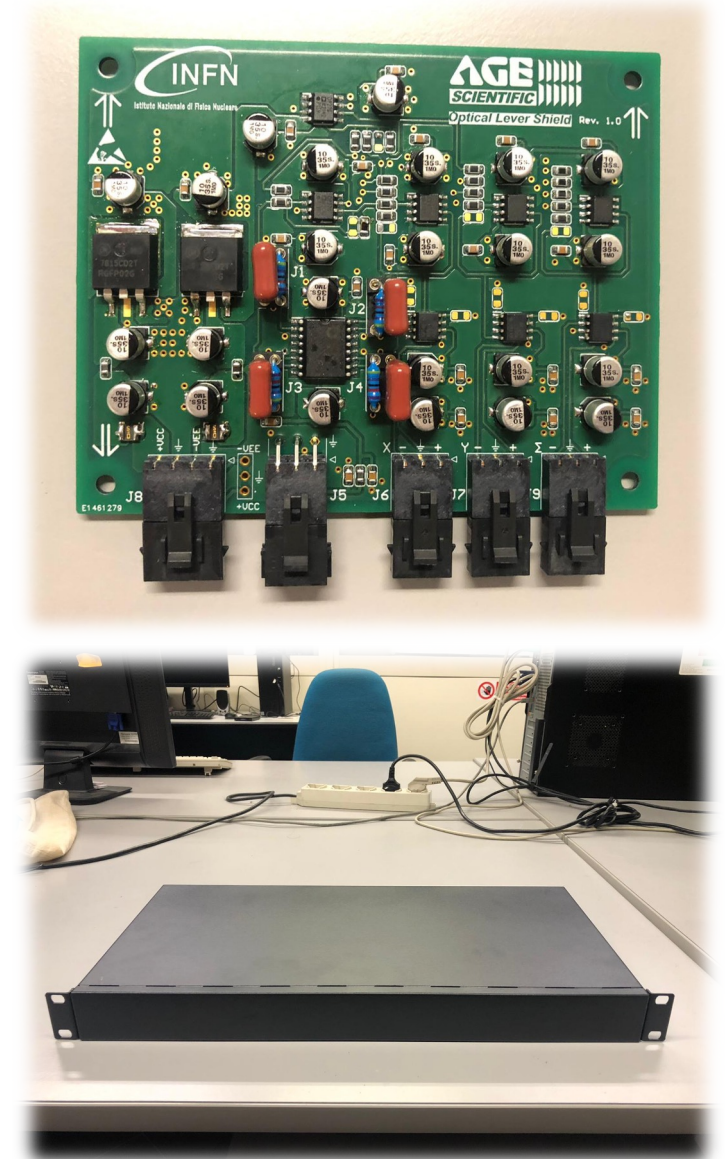
- WP4 Sensing and Control

The LNS group has taken responsibility for creating electronic boards for the optical levers based on the ones of Virgo and Archimedes' experiments.

We build a prototype optimizing the choice of components. These electronic boards read the four analogue inputs for the four quadrants of the PSD (position sensitive detector) and return the asymmetries along x and y and the sum channel as outputs.

Analysis done with a National Instrument cRIO (PXIe next year) using LabVIEW.

PCB and 6 shields were bought from a company.



Attività 2024

- WP4 Definition of the control system architecture as a function of the actuators and sensors for Nested Inverted Pendulum, commissioning, and test.

We need about 10 more Optical Levers shields and some PXIe modules to read their signals (few tens of keuro).

Potenziale output scientifico

- «New Generation of Superattenuator for Einstein Telescope: preliminary studies» article to be submitted.
- Outreach events in Sardinia (high school seminars, public events...).