Contribution ID: **19** Type: **Talk**

New Generation Superattenuators for Einstein Telescope (NGSA)

The 3rd generation instrument era is approaching, and the Einstein Telescope giant interferometer is becoming a reality with the possibility to install the detector in an underground site where seismic noise is 100 times smaller than on the surface. Moreover, new available technologies and the experience acquired in operating advanced detectors are the key points to further extend the detection bandwidth down to 2-3 Hz with the possibility to suspend a cryogenic payload. NGSA is an R&D project, involving the Napoli, Pisa and Sassari ET groups, based on the improvement of vibration isolation performance for 3rd generation detectors of Gravitational Waves 'Einstein Telescope (ET)'. Starting from the premise that the present mechanical system of the Advanced Virgo SA (2nd generation) is considered compliant with 3rd generation detector. Following this experimental line, we studied the possibility of improving the attenuation performance with a multistage pendulum chain equipped with improved magnetic anti-springs that is hung to a double Inverted Pendulum in nested configuration (NIP) with the outcoming goal of building and testing a NIP prototype in the "PLANET" laboratory in Naples. In this talk, we present the status of the NGSA project.

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Session Classification: Instrument Science Board (ISB)

Track Classification: ISB: Suspensions