

II. Workshop on ET-LF TM Tower Integration

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The reference solution: a Superattenuator for Einstein Telescope

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The Superattenuator - a cornerstone in seismic isolation systems for ground-based interferometers - is recognized as the seismic isolation reference solution for the Einstein Telescope in both the 2011 and 2020 Technical Reference Documents.

As seismic isolation system design progresses, evaluating the impact of targeted interventions on the performance of existing solutions is essential for effective risk mitigation.

The need for an update of the Superattenuator arises not only from the increased sensitivity, but also from the requirement to suspend a heavier, cryogenic payload, which makes the mechanics more demanding and imposes constraints on the materials, that must be compatible with both vacuum and cryogenic conditions.

In the conservative approach of the reference solution, the design is preserved: the simple yet effective upgrade detailed here does not alter the concept, but focuses on adjusting construction parameters, allowing the Superattenuator to meet the more demanding requirements of a third-generation interferometer while preserving its well-established reliability and performance.

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