

Contribution ID: 435

Type: **Presentazione orale**

## **Micro-Vibration Insulation for Optical Payloads: Design and Experimental Evaluation of Dynamic Response and Structural Strength of Lattice Panels with Different Densities**

*Thursday 3 September 2026 12:15 (15 minutes)*

This paper investigates micro-vibration insulation solutions for optical payloads through the design and experimental evaluation of lattice-core panels with periodic density distributions. The study focuses on additively manufactured sandwich structures, where a diamond lattice core is used to tailor the dynamic response of the system. Different panel configurations are considered in order to analyze the effect of density variation on vibration attenuation performance and structural strength. A combined approach based on numerical modeling and experimental testing is adopted to characterize the dynamic behavior and assess structural reliability under representative loading conditions. The objective is to establish a clear relationship between design parameters, dynamic response, and structural performance, providing guidelines for the development of efficient micro-vibration insulation systems for space applications.

**Primary author:** Mr TOMA, Abdo (Dipartimento di Meccanica, Politecnico di Milano, Italy)

**Co-authors:** Mr CERA, Mattia (Thales Alenia Space, Italy); Mr ZACCAGNINO, Emanuele (Agenzia Spaziale Italiana, Italy); Mr DI CLEMENTE, Marco (Agenzia Spaziale Italiana, Italy); Mr KEKULAWALA, Kevin (Thales Alenia Space, Italy); Mr LUMACA, Francesco (Thales Alenia Space, Italy); Dr RIVA, Emanuele (Dipartimento di Meccanica, Politecnico di Milano, Italy); Prof. FOLETTI, Stefano (Dipartimento di Meccanica, Politecnico di Milano, Italy)

**Presenter:** Mr TOMA, Abdo (Dipartimento di Meccanica, Politecnico di Milano, Italy)

**Session Classification:** Additive Manufacturing

**Track Classification:** Additive Manufacturing