



**UNIVERSITÀ
DI TRENTO**
Dipartimento di
Ingegneria Industriale

DII

Seminar



Stacked multi-wedge acoustic black holes for low-frequency vibration attenuation

May 8th 2024, h. 13:30

Room A203, Polo Ferrari 1 - Via Sommarive 5, Trento

Speaker: Max Käfer, B.Sc., M.Sc. - Research Center for Microtechnology, Vorarlberg University of Applied Sciences, Austria

Machine vibrations and oscillations generate escalating noise, posing a significant contemporary challenge. Industrial expansion and pervasive technology integration magnify this issue, emphasizing its detrimental impact on both machinery and human well-being. Acoustic black holes (ABH) emerge as a promising solution in passive vibration damping. Introducing stacked multi-wedge ABH offers versatile adaptation to desired frequency ranges deeper than 200 Hz without enlarging overall dimensions. This innovative design enhances broadband attenuation efficacy while conserving space. Analytical and numerical assessments corroborate its superiority over traditional single-wedge models. Experimental validation, utilizing additively manufactured steel samples, confirms remarkable performance improvements, including reduced wave reflection, lower cut-on frequencies, and enhanced energy dissipation within the ABH.

Info

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