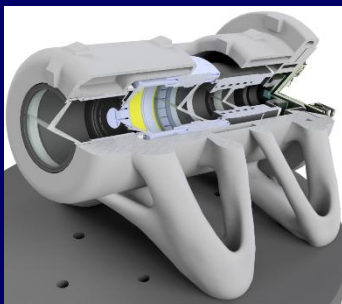


Student or Master thesis

Call for Proposals:
10.12.2025

Start: Immediately



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Experimental characterization of additively manufactured beam specimens with particle damping

Motivation

The Institute for Product Development and Device Construction is researching additive manufacturing processes aimed at functional and design optimization. A current focus is to understand how vibration modes can be influenced and used to improve the dynamic behavior of structural components.

In this project, the task is to investigate simple additively manufactured beam specimens with and without integrated particle filled cavities. By characterizing their vibration behavior and damping performance, an equivalent damping model will be derived that can later be used for more complex optical housings.

Potential Work Packages

- Literature research on methods for identifying damping from experimental frequency response functions
- Setting up and performing vibration tests on a shaker, including sensor placement and data acquisition
- Evaluating frequency response functions, extracting natural frequencies and damping ratios
- Deriving a simple equivalent damping model that can be transferred into finite element simulations
- Written documentation of results, including discussion and critical evaluation

Your Profile

- Interest in additive manufacturing, vibration and experimental work
- Independent and structured working style
- Reliability and accuracy in handling measurements and data
- Basic knowledge of data analysis tools, for example MATLAB or Python
- Enjoyment of scientific work and documentation

Have we sparked your interest? If so, we look forward to receiving your application