



## Experimental study of elastic wave propagation in granular media

At the chair of continuum mechanics of the Institute of Applied Mechanics (CE) the following Master thesis is offered in collaboration with Multi-Scale Mechanics, University of Twente, NL.

**Motivation:** Granular mixtures play a significant role in industrial processes; for instance, mixtures of asphalt and concrete have been widely used to construct roads. Exploring and understanding the effects of granular composition on the physical properties can help in optimizing the amount of asphalt required to make the pavement robust and enduring for longer.

**Goal:** The study of wave propagation allows inferring many fundamental properties of granular materials such as elastic constants and dissipation mechanism. In this work, wave propagation (P- and S-wave) is studied experimentally through various mixtures (in size and materials) of granular materials in order to fine tuning stiffness with respect to different material mixtures. Finally, experimental results are compared by experimental tests to validate simulation data.

### Tasks:

- Literature review
- Conducting experiments
- Post-processing
- Interpretation and discussion of results

### Requirements:

- Interest on carrying experimental tests
- Ability to modify the setup
- Design of experiment (DoE)
- Basic programming skills, e.g. Matlab

### Language:

- English

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