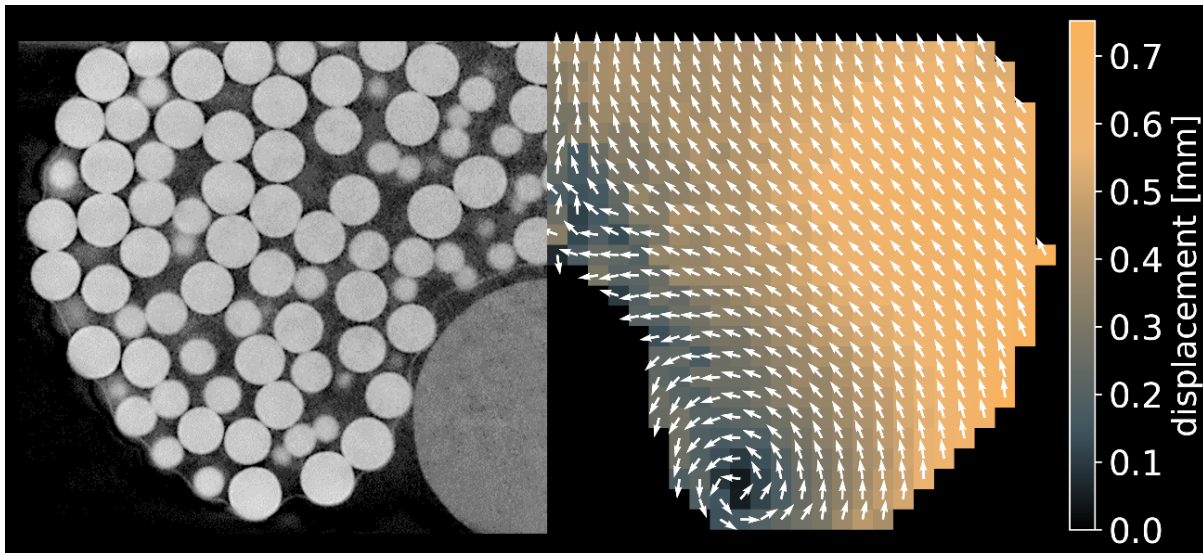


## Master's Thesis

# Granular metamaterials



### Project description:

Metamaterials are a novel type of material, whose properties can be artificially designed by controlling their geometrical structure. Granular metamaterials exploit the features of granular packings to create objects with unexpected, fascinating properties. This exciting new class of materials offer endless possibilities. In this project, we will focus on a specific type of granular metamaterial: particles enclosed by an elastic membrane, whose macroscopic stiffness can be actively controlled by the pressure gradient between the inside and the outside of the membrane. The mechanical properties of such granular metamaterial will be studied through typical mechanical tests and X-ray imaging. These granular metamaterials can be used to create shelter on the Moon, emergency housing, medical devices and soft robots.

### What we will you learn:

Design, construction and automation of experiments. X-ray computed tomography and radiography. Image processing and analysis. Creativity, interest for scientific research, ability to work independently in a diverse environment.

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