Master's Thesis

Multiscale topology optimization

Supervisor: M.Sc. Simon Peters

Background: Ever finer structures can be produced with 3D printing technologies. This means that complex printable structures, such as those shown in Fig. 1, cannot be adequately analysed using conventional structural mechanics methods. This manifests itself especially when complex structures are to be optimised with regard to their topology. Multi-scale analyses can provide a remedy here.

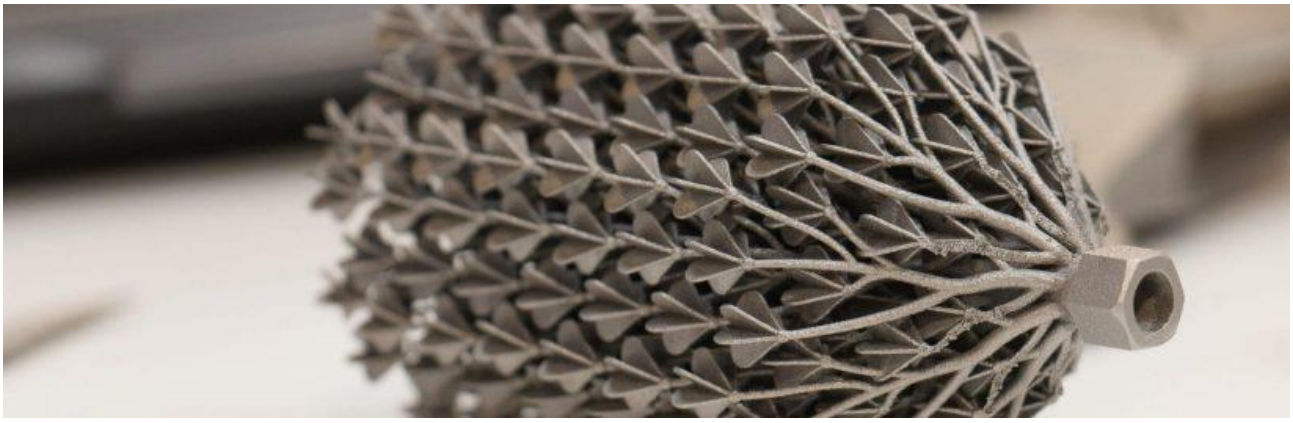

Figure 1: Complex 3D printed structure

Tasks: As part of a research project, the thermo-mechanical behavior of concrete at the mesoscale is needed for a validation study. The tasks of this Master's thesis are:

- Get familiar with topology optimization
- Get familiar with multiscale analysis
- Carry out multiscale topology optimization with a structural mechanics programm e.g. Abaqus or ANSYS

Contact:

M.Sc. Simon Peters
Room: IC 6/165
Lehrstuhl für Statik und Dynamik
Email: simon.peters@rub.de