

Masterthesis

3D Micromechanical Modelling of Fatigue in Si-GJS

Project

High silicon alloyed nodular cast iron (Si-GJS) is an innovative material offering both, high ductility and strength. Therefore, it is suitable for wind energy applications. The influence of microstructure on the effective mechanical properties of the components needs to be accounted for in the design process. A suitable method to investigate effective properties is an RVE approach. Here, the microstructure is modelled as an FE-Model from either 2D or 3D-Data or generated artificially from statistical data. In this work, a 3D-Model is to be constructed to simulate the fatigue behaviour with an in-house code. The results should be compared to an existing 2D approach.

Tasks

- Model 3D-Microstructure
- Investigate effective material properties of 2D and 3D models
- Compare results

Requirements

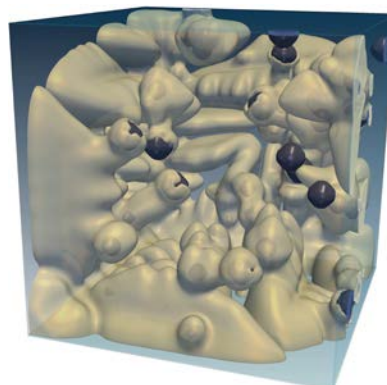
- Self-initiative and independent work
- Highly motivated
- Experience with Python, MatLab

We are offering

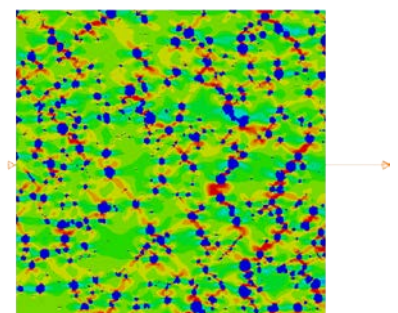
- Very productive work environment and continuous support
- Chance to recommend for a PhD- or HiWi-position
- New HiWi-room, weekly meetings, structured timeline

Contact

Christian Gebhardt, M. Sc.
Augustinerbach 4, Room 206
52062 Aachen
Tel.: +49 241 80 99537
c.gebhardt@iwm.rwth-aachen.de
www.iwm.rwth-aachen.de



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2D-RVE