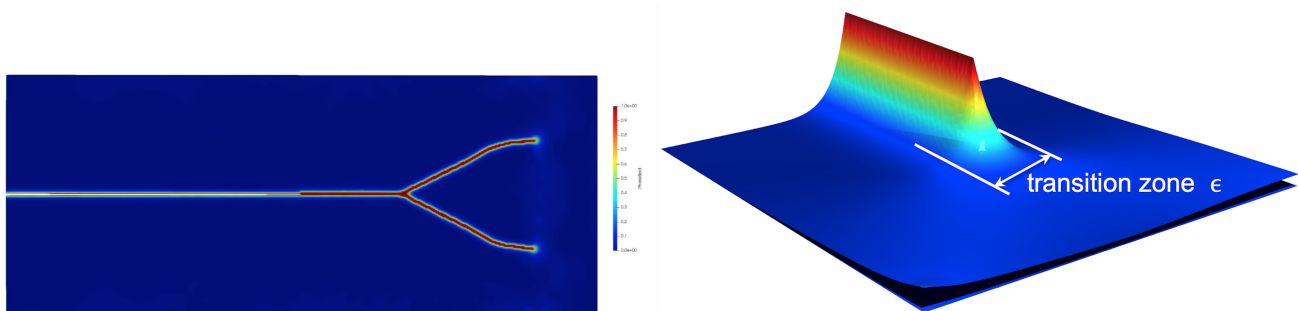


## Phase-field models for brittle and cohesive fracture

### seminar or master/project thesis

The phase-field model of fracture offers a powerful computational approach to represent cracks. This method captures complex crack topology and behaviour using a phase-field variable that smoothly transitions between intact and cracked regions. Building upon the previous implementation of a phase-field model for brittle fracture, we now aim to extend this model for cohesive fracture analysis. The focus of this project is to conduct an in-depth literature study, exploring various phase-field models for cohesive fracture. Additionally, there is an opportunity to write a master thesis, showcasing the implementation of a cohesive fracture approach within the framework of FEniCS or deal.II. This research presents a chance to contribute to the field of fracture mechanics and gain valuable experience in computational modeling and simulation of fracture.



The student will work in close collaboration with researchers at Institute of Applied Dynamics (LTD) and GRK 2423 FRASCAL who are focused on the modeling of fracture.

#### Qualifications

- studies in the field of Mechanical Engineering, Computational Engineering, Mathematics or similar
- good written and verbal communication skills in English

#### Additional qualifications (for master thesis)

- knowledge of solid mechanics and the finite element method
- good programming skills are essential, preferably in Python or C++

If interested, please send an email to:

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