INSTITUT FÜR MASCHINENELEMENTE
KONSTRUKTION UND FERTIGUNG
PROFESSUR MASCHINENELEMENTE

TU BERGAKADEMIE FREIBERG
TUBAF
Die Ressourcenuniversität.
Seit 1765.

Abschlussarbeit zu vergeben!

# Implementation of a user material for the explicit finite element program Radioss

## Motivation

The FEA program Radioss enables the simulation of time-dependent events, such as crash simulations. The selection of material models is limited, resulting in the need to implement new, user-defined material models. These must be programmed in the Fortran programming language and integrated into the program according to the specifications. The initial goal is to implement a linear-elastic material model. Existing material models can be used for comprehensive comparative analysis.

## Tasks:

- Literature review to the implementation of user-defined material models
- Definition of the stress-strain relationship for linear-elastic material behavior under plain stress
- Implementation of the relationship in the user material
- Implementation in Radioss as user material for shell elements
- Definition of benchmark test and comparison with existing material models
- Definition von Testlastfällen und Vergleich mit bestehenden Materialmodellen
- Evaluation of the quality and performance of the model
- Scientific poster as a summary of the thesis
- Documentation (Master thesis)

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