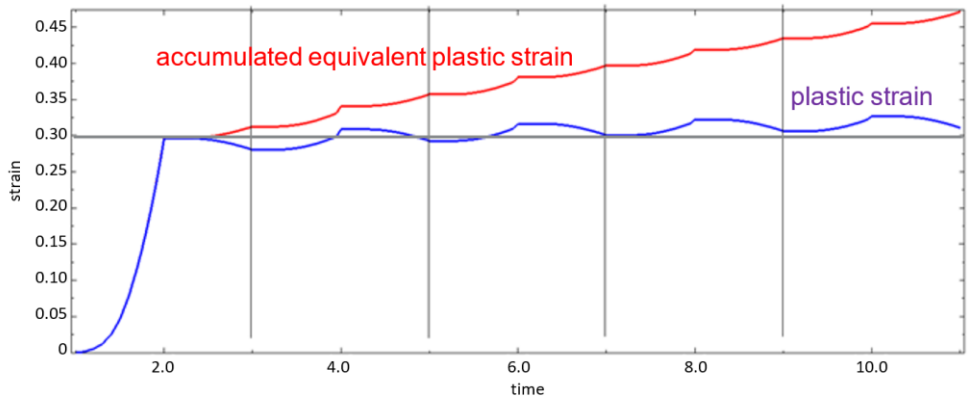
TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

INSTITUT FÜR MECHANIK UND MECHATRONIK
Mechanics & Mechatronics

Announcement Master's Thesis

Analysis of Ductile Damage under Uniaxial Cyclic Loading

A ductile damage model is used to correlate the initiation of fracture with the plastic strain components that emerge in a structure during loading. However, in the case of cyclic loading, such as towing and repeated driving over bumps and potholes in vehicles, there is a significant difference between the accumulated equivalent plastic strain and the magnitude of the plastic strain, as illustrated in the figure below. It is essential to ensure that the ductile damage criterion and correct plastic strain components defined in a Finite Element Model are suitable for addressing this issue. In this study, a ductile damage model will be studied to evaluate the low cycle fatigue of the structure under uniaxial cyclic loading.



What is expected to be done in this study?

- The theoretical damage criteria will be searched, and the most suitable criterion for the defined loading conditions will be determined.
- The available damage criteria defined in ABAQUS/CAE will be studied and compared.
- The selected criterion will be applied to ABAQUS/CAE for a sample problem, and the results will be evaluated.

Your profile:

- Good knowledge of the basics of mechanics
- Good programming skills in ABAQUS/CAE or having the motivation to learn it
- Independence, a high level of motivation and problem-solving skills

Financial support will be provided within the study!

The project is a cooperation with Magna Steyr Fahrzeugtechnik GmbH & Co KG.

If you are interested in working on this master's thesis with us and would like to join our team, please contact us by sending a short email.

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