UNIVERSITÄT SIEGEN

FLB
Lehrstuhl für Fahrzeugleichtbau

Siegen, 13.07.2021

Bachelor/Masterarbeit

"Experimental Investigation of energy release rates of woven fabrics and more intrinsically connected FRP composites"

The predictive capability of crash simulation in FRP materials concerning material failure is still in need of improvement due to the complex damage mechanics like delamination, fiber kinking and debonding effects. A considerable research work has been done on predicting the delamination growth in composite materials through fracture mechanics approach. The goal of this master thesis is to experimentally determine the interlaminar fracture energies in mode 1 and mode 2 zones with the experimental investigation of Double Cantilever beam tests (DCB) and End Notch Flexural Tests (ENF) tests of different fiber reinforced materials

Fig: Shows the test setup for DCB tests (Left) and ENF tests (Right)

Here are the major tasks:

- Literature review of various fracture energy testing methods
- Precise Preparation of DCB and ENF specimens in the press
- Carrying out the DCB and ENF tests in the existing test setup
- Evaluation of energy release rate values from ARAMIS
- Methodological improvement and extension of test method to high speed DCB and ENF tests

Qualification:

- Bachelor/ Masters Student enrolled in Mechanical Engineering / Vehicle Construction / o. ä Studium;
- Knowledge in Fracture mechanics and material characterization
- Reliable and accurate style of working;
- Fluent in English and German

Beginn: Immediately

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