Karlsruhe Institute of Technology

CoDiCo FRP

Seminar series of the Graduate School GRK 2078

Referee:	**Dr.- Ing. Constantin Krauß** Group Leader forming and structural simulation Interface development for CAE chain
Date:	Tuesday, April 16, 2024
Time:	14:30-15:30h
Location:	Building 10.23, 3rd floor, seminar room 308.1 Please note that you can also participate in the event online
Title:	**Direction-Dependent Result Data Transfer in Virtual Process Chains for Fiber-Reinforced Polymers and the Impact on Structural Simulation**

Abstract

In order to consider the impact of manufacturing effects on the macroscopic structural properties, relevant result fields are passed along virtual process chains between individual simulation modules. This comprises scalar fields, such as temperature, pressure, or fiber volume content, but also direction-dependent, i.e. tensor-valued fields, e.g. fiber orientation tensors (FOT). Usually, the temporo-spatial second-order FOT field is explicitly solved for in macroscopic manufacturing simulations, while higher-order FOT are determined via an algebraic closure approximation taking the second-order FOT as argument.
This talk focuses on the interpolation and averaging of second-order and fourth-order FOT fields in the scope of result data transfer between non-congruent spatial discretizations. The first part discusses the local and global influence of the underlying interpolation schemes by means of application-relevant examples. In the second part, we address the question of the sequence of the averaging and closing operations – both quantitatively and with regard to general statistical and physical validity.

You are cordially invited to take part in the event.

Prof. Dr.-Ing. Thomas Böhlke
(Spokesperson of GRK 2078)