Die Graduiertenschule MUSIC mit dem IRTG 1627 lädt ein zum Vortrag:

"Rigid-flexible multibody dynamics applications considering contact interaction"

January 26, 2018 – 02.00 p.m.
Graduiertenschule MUSIC, Appelstr. 11A
MUSIC Seminar room 5th floor
Room A 501

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Nonlinear finite element models are widely employed for simulating deformable solids. Particularly, such methods may be used to simulate a system of bodies. In this context, however, one needs to establish mechanical constraints. On the other hand, not always one is interested in considering flexibility of a body. Sometimes the objective is to analyze stresses/strains only in certain bodies, while others may be modeled as rigid bodies, saving degrees of freedom. In this context, the called rigid-flexible multibody software may be employed.

This lecture will comment on how to think of a rigid-flexible multibody model based on a nonlinear finite element framework. Developments such as structural elements formulations (e.g.: beams and shells), joints (e.g.: spherical, Cardan) and contact constraints will be briefly covered, focusing on the contributions of each part to overall system. A software structure to embrace all these items will be discussed. Particularly, a rigid body as a finite element formulation will be shown, such as some contact models involving it.

Examples of applications will be given, particularly involving dynamics of wind turbine systems, with blade modeling using equivalent beams with proper choice of stiffness properties.