

Time	Wednesday 01-March-2017	Thursday 02-March-2017	Friday 03-March-2017
08:30 - 10:00	Lecture 1	Lecture 4	Hands-on projects - session 1
10:00 - 10:30		Coffee Break	
10:30 - 12:00	Presentations by participants	Lecture 5	Hands-on projects - session 2
12:00 - 13:30		Lunch	
13:30 - 15:00	Lecture 2	Lecture 6	Hands-on projects - session 3
15:00 - 16:00	Presentations by participants	Presentations by participants	
16:00 - 16:30		Coffee Break	
16:30 - 17:00	Lecture 3	Poster session	Hands-on projects - presentations and awards
17:00 - 18:00		Hands-on projects - brainstorming	

TOPICS

- Nonlinear constitutive modeling
- Fracture and damage mechanics
- Computational multiscale modeling
- Computational contact mechanics
- Multiphysics and coupled problems
- Non-traditional computational techniques

CALL FOR CONTRIBUTIONS

Organizers wish to select a group of participants who may contribute to fruitful discussions. All participants are requested to submit online, before **01-Nov-2016**, a two-page summary of their research activity (notification of acceptance by **30-Nov-2016**).

During the submission, participants may indicate if they also wish to present their work. In this case, the research summary should focus on the specific argument that will be presented. Both oral and poster sessions will be organized.

REGISTRATION

Early registration fee: **€150** (until **23-Dec-2016**)

Late registration fee: **€200** (until **15-Feb-2017**)

On-site registration is not available.

The fee covers attendance to all lectures, lecture notes, light refreshments and lunches.

WORKSHOP SECRETARIAT

Ajay B. Harish,

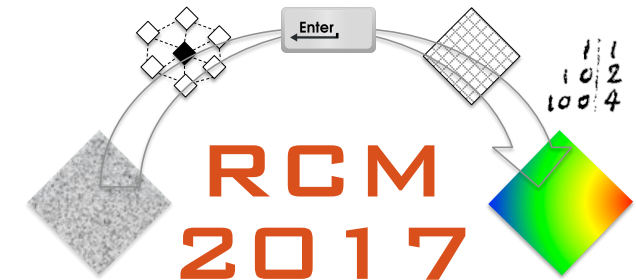
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WORKSHOP - CONFERENCE

RESEARCH CHALLENGES IN MECHANICS

APPLICATIONS OF AUTOMATED
COMPUTATIONAL MODELING



1.- 3. March 2017

Hannover, Germany



VivaCE „Virtual Materials and their
Validation: German-French School of
Computational Engineering“ - IRTG 1627



Graduate School
MUSIC
Multiscale Methods for
Interface Coupling



Leibniz
Universität
Hannover



GRADUIERTEN
AKADEMIE
der Leibniz Universität Hannover

AIMS AND DESCRIPTION

RCM2017 aims to collect recent results in Mechanics and present novel challenges for perspective applications related to bioengineering, advanced manufacturing, energy research, composite materials and many others engineering fields.

The workshop-conference will allow young researchers to explore beyond their primary research area and to apply innovative concepts of computational mechanics. In particular, the potentialities of Automated Computational Modeling will be highlighted. This technique allows to speed up the process of generating novel and nonlinear computational environments, leading to a great advantage for both research and industry.

RCM2017 couples a **traditional instructive format** with **interactive sessions**. Lectures include those from both guest professors and selected participants. Furthermore, participants will be involved in hands-on projects on research issues in which the potentialities of Automated Computational Modeling can be effectively exploited.

The projects will require numerical implementation via the Mathematica package AceGen. Depending on the research topics of participants, teams will be formed for the hands-on projects and obtained results will be presented at the end of the workshop-conference. At least one expert user of AceGen will be present in each team. Depending on project outcomes, the best-team will be awarded with a prize of €100 per participant.

RCM 2017 will allow participants to be involved in teamwork with experts from other areas, thus fostering not only collaborations but also a novel insight on implementation issues.

INVITED LECTURERS



LAURA DE LORENZIS
Technische Universität Braunschweig
Phase-field modeling of fracture



JOŽE KORELC
University of Ljubljana
Sensitivity analysis for multiphysics and multiscale frameworks



JAKUB LENGIEWICZ
IPPT, Polish Academy of Sciences
Recent advances in computational contact mechanics



UDO NACKENHORST
Leibniz Universität Hannover
Computational modeling in biomechanics



JÖRG SCHRÖDER
Universität Duisburg-Essen
Novel computational approaches for anisotropic hyperelasticity



PETER WRIGGERS
Leibniz Universität Hannover
Mixed methods for large-strain finite element simulations

SUGGESTED READINGS

Korelc J., Wriggers P. Automation of Finite Element Methods. Springer (2016)

Schröder J., Viebahn N., Balzani D., Wriggers P. A novel mixed finite element for finite anisotropic elasticity; the SKA-element. CMAME, in press (2016)

Ambati M., Gerasimov T., De Lorenzis L. A review on phase-field models of brittle fracture and a new fast hybrid formulation. Comp. Mech. 55: 383-405 (2015)

Stupkiewicz S., Lewandowski M.J., Lengiewicz J., Micromechanical analysis of friction anisotropy in rough elastic contacts, IJSS 51:3931-3943 (2014)

Lengiewicz J., Korelc J., Stupkiewicz S., Automation of finite element formulations for large deformation contact problems, IJNME 85:1252-1279 (2011)

Lutz A., Nackenhorst U., Numerical investigations on the biomechanical compatibility of hip-joint endoprostheses, Arch. Appl. Mech. 80: 503-512 (2010)

Korelc J. Automation of primal and sensitivity analysis of transient coupled problems. Comp. Mech. 44:631-649 (2009)

Wriggers P. Nonlinear Finite Element Methods. Springer-Verlag (2008)

AUDIENCE

RCM2017 is primarily targeted at young research assistants, doctoral students, post-doctoral scholars and early stage researchers.

ORGANIZING COMMITTEE

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Nirajkumar Jha (IBNM, LUH Hannover)

Michele Marino (IKM, LUH Hannover)

FURTHER INFORMATION

Please visit our website at:

www.rcm2017.uni-hannover.de

for manuscript templates and submission, registration and other conference queries.