TECHNISCHE UNIVERSITÄT DRESDEN

4th GACM Colloquium on Computational Mechanics

Wednesday, August 31

		Hörsaalzentrum (HSZ) 004				
09:00		Opening				
09:20		Keynote lecture Prof. David Roger Jones Owen (Swansea University) „Fifty years of finite elements: Progress in solid mechanics and future prospects“				
10:20		Coffee break				
		HSZ 004	**HSZ 201**	**HSZ 204**	**HSZ 301**	**HSZ 405**
10:50	Parallel session I	**MS 1: Inverse problems and optimization in industrial applications**	**MS 3: Computational modelling of electro-magnetic functional materials**		**MS 2: Modelling and simulation of damage and fracture**	**MS 10: Fluid mechanics**
		Efficient design of lightweight structures based on parameter-free and parallel structural optimization M. Fischer; M. Firl; H. Masching; K.-U. Bletzinger	*A framework to consider the electric conductivity of piezoceramic materials within a nonlinear FE-Simulation* H. Schwaab; M. Deluca; P. Supancic; M. Kamlah		*Aspects of crack propagation in small and finite strain continua* K. Özenc; M. Kaliske	*Asymmetric solutions in simulating twin-roll casting using a symmetric geometry* A. Miehe; U. Groß
11:10		*Advanced analysis of sensitivities in shape optimisation* N. Gerzen; F. J. Barthold	*Electrochemical based battery models for hybrid vehicle simulation at system level* L. Kostetzer; S. Nallabolu; E. Rudnyi		*Numerical simulation of stress transfer mechanism in textile reinforced concrete regarding reinforcement splices and reinforcement anchoring* A. Azzam; M. Richter; B. W. Zastrau	*Thermohydraulic simulations for nuclear power plant cooling pipes* M. Lieb; T. Neckel; R. Sangl; P. Schöffel; F. Weyermann
11:30		*Detection of permissible design spaces by means of an inverse solution approach* S. Pannier; W. Graf; M. Kaliske; M. Liebscher; H. Müllerschön; K. Grossenbacher; M. Ganser	*A geometrically consistent incremental variational formulation for phase field modeling in micromagnetics* G. Ethiraj; C. Miehe		*Fracture mechanics bifurcation analysis of three dimensional crack patterns* M. Hofmann; H.-A. Bahr; H. Balke; G. Fischer; J. Nellesen; W. Tillmann	*Numerical study of coolant variation in supersonic film cooling* C. Windisch; Th. Gotzen; S. Müller; B. Reinartz
11:50		*Stochastic methods for the identification of solution spaces: An alternative method for robustness analysis and multidisciplinary optimization* L. Graff; M. Zimmermann	*A mixed finite element formulation for magneto-sensitive elastomers* F. Vogel; P. Steinmann		*Phase field models of dynamic fracture: Variational principles and robust multi-field FE implementation* M. Hofacker; C. Miehe	*Large eddy simulation of the flow in a closed subchannel of a fuel rod-bundle* E. Séverac; J. Fröhlich
12:10		*Crash behavior of thin-walled box beams with complex sinusoidal relief patterns* O. M. Qureshi; E. Bertocchi	*Modelling of a magnetorheological fluid under shear deformation* M. Obst; M. Kästner; J. Brummund; V. Ulbricht		*Simulation of cracked elasto-plastic materials with damage using the Extended Finite Element Method* H. Clasen; S. Loehnert; P. Wriggers	*Flow simulation and optimization of a subsonic high-turning tandem compressor cascade* G. Canon Falla
12:30		Lunch break				
14:00	Parallel session II	**MS 1: Inverse problems and optimization in industrial applications**	**MS 6: Methods and applications in computational acoustics**	**MS 13: Computational contact and interface mechanics**	**MS 2: Modelling and simulation of damage and fracture**	**MS 10: Fluid mechanics**
		Concept modeling and optimization of vehicle crash structures J. Fender; M. Zimmermann	*Numerical computations of static and moving fluids for exterior eigenvalue problems* S. Fuß; S. Marburg	Simulation of the rolling and spinning motion of ball rollers U. Zwiers	*A concrete material damage law for high strain rates* T. Kühn; U. Häussler-Combe; M. Kitzig	*Simulating die swell in the context of profile extrusion* L. Pauli; S. Elgeti; M. Behr
14:20		*Non-linear optimisation case study: Battery box for hybrid electrical vehicle* J. Christensen	*On the reconstruction of acoustical boundary admittances in enclosed spaces with arbitrary geometry* R. Anderssohn; S. Marburg	*A new concept for thermomechanical analysis of bodies in stationary rolling contact* A.Suwannachit; U. Nackenhorst	*Modeling and numerical simulations of damage and fracture in dynamic tension tests* S. Gerke; M. Brünig	*Carbon dioxide storage in the subsurface: Regarding solid deformations and phase transition processes* K. Häberle; W. Ehlers
14:40		*Optimization of a bonnet for pedestrian protection in the context of the product development process* T. Dietrich; F. Duddeck	*Methods and resolution considerations for the calculation of sound radiation from railway wheelsets with the BEM* C. Klotz; M. Beitelschmidt	*ALE formulation for tire-pavement-interaction* I. Wollny; M. Kaliske	*Failure modelling in aluminium HPDC components: Using a probabilistic approach* O. Knoll; K. Schweizerhof; O. S. Hopperstad; M. Langseth	*On numerical methods for the simulation of two-phase flows with population balance systems* E. Schmeyer; V. John
15:00		*A sub-structure approach for shape optimisation for crashworthiness* M. Rayamajhi; S. Hunkeler; F. Duddeck	*Locating moving noise sources with a time-domain beamforming algorithm* J. Stier; M. Beitelschmidt	*Experimental investigation of three-body abrasive wear with high pressure* T. Y. Doan; K. M. de Payrebrune; M. Kröger	*Lifetime prediction of filled elastomers under multiaxial loading conditions* M. Doniga-Crivat; D. Juhre; J. Ihlemann	*Remarks on a mixed least-squares finite element formulation of the Navier-Stokes equations for incompressible Newtonian fluid flow* A. Schwarz; J. Schröder
15:20				*A finite element contact implementation for viscoelastic solids on rough surfaces* X. Duong; R. Sauer	*Adaptive continuation methods for highly nonlinear equilibrium paths including softening* T. Pohl; M. Bischoff	*Massive parallelization of an incompressible fluid solver in the PDE framework Peano* K. Unterweger; M. Mehl; T. Neckel; T. Weinzierl
15:40		Coffee break				
16:10	Parallel session III	**MS 1: Inverse problems and optimization in industrial applications**	**MS 11: Fluid-structure interaction**	**MS 13: Computational contact and interface mechanics**	**MS 2: Modelling and simulation of damage and fracture**	**MS 10: Fluid mechanics**
		Robust shape optimization for shear-thinning fluids M. Probst; S. Elgeti; M. Nicolai; M. Behr	*Fluid–structure interaction simulation of laminar & turbulent flows* G. De Nayer; M. Breuer; M. Münsch	*A finite element contact formulation for highly slender beam structures and its application to biopolymer networks* C. Meier; A. Popp; C. Cyron; W. A. Wall	*Application of a constitutive material model with a multilinear yield surface* V. Effinger; A. Haufe	*A discontinuous Galerkin spectral element method for the simulation of turbulent compressible flows* A. Beck; C. Altmann; G. Gassner; F. Hindenlang; M. Staudenmaier; C.–D. Munz
16:30		*Topology and shape optimization of car bodies in the initial and concept phase of vehicle development* K. Volz	*Mapping methods for isogeometric shell analysis in a partitioned fluid-structure interaction environment* R. Schmidt; R. Wüchner; K.-U. Bletzinger	*An interface element for modeling hip joint contact* K. Fietz; U. Nackenhorst	*Numerical simulation of impact and detonation loads on concrete structures* N. Gebbeken; A. Pietzsch; M. Hübner	*A finite element method for simulating natural convection in electrochemical cells* A. Ehrl; G. Bauer; W. A. Wall; V. Gravemeier
16:50		*Pseudo topology optimisation for crashworthiness design, hybrid cellular automata adapted to thin-walled structures* S. Hunkeler; M. Rayamajhi; F. Duddeck; H. Zimmer	*Numerical simulation of a turbulent FSI benchmark case* T. Reimann; D. C. Sternel; M. Schäfer	*Investigation on the separation process of adhesive rubber contacts* S. Thiele; M. Kröger; R. Nepp	*Modelling of high temperature creep of a nickel-based turbine disk during heat treatment* G. Rauer; A. Kühhorn; M. Springmann	*An extended variational multiscale finite element method for two-phase flow* U. Rasthofer; F. Henke; V. Gravemeier; W. A. Wall
17:10		*Design of a GFRP crash energy absorber: Cross section and stacking sequence optimization* S. Mantovani	*Finite element method for strongly-coupled systems of fluid-structure interaction with application to granular flow in silos* S. Reinstädler; A. Zilian; D. Dinkler	*Simulation and model validation of the dynamic of components with adhesive rubber contacts* C. Berndt; M. Kröger; R. Nepp	*A finite element approach for temperature simulations in speed-stroke grinding* A.-T. Vu; F. Klocke; B. Linke	*Moving meshes in large-eddy simulation* S. Löbig; J. Lang; C. Hertel; J. Fröhlich
17:30			*CFD tool for monitoring of air pollution produced by aircraft engine emission inside the airport* K. Synylo	*Analysis of some contact-impact problems at nano-scale* S. S. Gautam; R. A. Sauer		*Grid adaption using MMPDE on cell center points* M. Schümichen; C. Hertel; J. Fröhlich
		HSZ 304				
17:50 …		Get-together + Poster session				

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TECHNISCHE UNIVERSITÄT DRESDEN

4th GACM Colloquium on Computational Mechanics

Thursday, September 1

		Hörsaalzentrum (HSZ) 004				
09:15		**Keynote lecture**				
		Prof. Marek Behr (RWTH Aachen) „Physiological modeling in computational hemo-dynamics“				
10:15		**Plenary lecture**				
		Matthias Winker; Friederieke Noack (TU Dresden, European Project Center) „EU funding – a stepping stone into your scientific career!?“				
10:40		**Coffee break**				
		HSZ 004	**HSZ 201**	**HSZ 204**	**HSZ 301**	**HSZ 405**
11:10	Parallel session IV	**MS 12: Structural dynamics and computational model reduction**	**MS 11: Fluid-structure interaction**	**MS 13: Computational contact and interface mechanics**	**MS 7: Computational modelling of composite structures**	**MS 4: Multi-functional materials and coupled multi-field problems**
		Model reduction for non-linear finite element analysis applied to bio-mechanical structural mechanics A. Radermacher; S. Reese	*On the impact of LES subgrid-scale models on fluid-structure interaction in turbulent flows* M. Münsch; A. Delgado; M. Breuer	*XFEM-based approach to plasticity at grain boundaries in polycristalline materials using Nitsche's method* M. Mayr; W. A. Wall; M. Hautefeuille; J. Dolbow	*Predicting the hygroexpansion behavior of wood by means of multiscale modeling* S. Gloimüller; K. Hofstetter; T. K. Bader; J. Eberhardsteiner	*New solid-shell and solid-beam finite elements with application to thermo-mechanically coupled problems in biomechanics* J. Frischkorn; S. Reese
11:30		*On the equation of motion of a string with one time variant boundary condition* A. Franze; B. W. Zastrau	*Verification examples for computational fluid-structure interaction* S. Sicklinger; R. Wüchner; K.-U. Bletzinger	*Local contact search by unconstrained optimization methods in the FE procedures for contact-impact problems* J. Kopacka; D. Gabriel; J. Plešek; M. Ulbin	*3D-modeling of dowel-type timber connections* M. Dorn; K. Hofstetter; J. Eberhardsteiner	*Thermo-hydro-mechanical modeling of freezing porous materials* M. Zhou, G. Meschke
11:50		*Adaptive discontinuous and continuous Galerkin integration schemes* T. Gleim; S. Carstens; D. Kuhl	*Developments in mesh-moving and mesh-update schemes for space-time finite element discretisations of fluid flows* H. Schippke; A. Zilian	*A computational contact model for liquid membranes on microstructural rough surfaces* M. Osman; R. A. Sauer	*An adaptive cohesive element approach for brittle failure in timber structures* C. Jenkel; M. Kaliske	*Application of the discrete element method to mechanical and thermal field problems* M. Hahn; B.-H. Kröplin; T. Wallmersperger
12:10		*Finite element modelling of energy extraction from flow induced structural vibrations by means of piezoelectric materials* S. Laue; A. Zilian	*Acoustics of moving structures in low Mach-number flows* F. Flitz; D. C. Sternel; M. Schäfer	*On the effect of negative Poisson's ratio on the contact properties* N. Aouni; P. Wriggers; R. Sauer	*Constitutive modeling of an adhesive layer* F. Kieser; S. Klinkel; C. Kessler; W. Kurz	*Simulation of heat development in a laser crystal* D. Nolte; S. Loehnert; P. Wriggers; U. Morgner; P. Pfullmann
12:30		**Lunch break**				
14:00	Parallel session V	**MS 12: Structural dynamics and computational model reduction**	**MS 8: Multi-body-dynamics**	**MS 5: Soft tissue mechanics: modelling and simulation**	**MS 7: Computational modelling of composite structures**	**MS 4: Multi-functional materials and coupled multi-field problems**
		Coupling of the integral transform method with the finite element method in the wave number-frequency domain M. Hackenberg; G. Müller	Investigation of drive train vibrations of a four-axle locomotive C. Lein; M. Beitelschmidt	*Modelling and simulation of drug infusion into the white matter tracts of human brain tissue* A. Wagner; W. Ehlers	*A micromechanics oriented model for the finite element analysis of steel fibre reinforced concrete* Y. Zhan; G. Meschke	*Stability analysis of decoupled solution schemes for surface and volumetrically coupled problems* S. Zinatbakhsh; B. Markert; W. Ehlers
14:20		*Combining numerical and semi-analytical methods for predicting reradiated sound of wooden slabs* M. Kohrmann; M. Buchschmid; G. Müller	*Dynamics simulation of flexible tubes as combined application of finite elements and multibody systems* J. Ebert; A. Keil	*Investigations on hip-joint mechanics under physio-dynamical loading* J. Mabuma; B. Markert; W. Ehlers	*Finite-element-based two-scale modeling of short- fiber reinforced composites* V. Müller; B. Brylka; F. Fritzen; T. Böhlke	*A nano-scaled ferroelectric energy harvester on substrate* M. Krauß; I. Münch; W. Wagner; C. M. Landis
14:40		*Augmented beam element* J. Kreutz; G. Müller	*Real time simulation of multibody systems* C. Schubert; G. Kunze; M. Beitelschmidt	*FSI modeling of patient-specific aortic manipulation during cardiopulmonary bypass surgery* M. H. de Vaal; M. W. Gee; W. A. Wall; U. A. Stock	*Numerical aspects of computational homogenization of epoxy/glass composites* R. Fleischhauer; H. Dal; M. Kaliske	*Multiscale simulation of piezoelectric materials using configurational force theory* M. Khalaquzzaman; R. Müller; B. X. Xu
15:00		*On a weighted mixed least-squares finite element formulation for quasi-incompressible elastodynamics* K. Steeger; A. Schwarz; J. Schröder	*Providing of improved load assumption for complex drivetrains using the multibody-system method* B. Schlecht; T. Rosenlöcher; T. Schulze	*Analysis of biopolymer networks using nonlinear three-dimensional beam elements* K. W. Müller; C. J. Cyron; W. A. Wall; A. R. Bausch		*Two-dimensional analysis of stationary magnetic fields and magneto-structural coupling* C. Spieler; J. Goldmann; M. Kästner; J. Brummund; V. Ulbricht
15:20		**Coffee break**				
15:50	Parallel session VI	**MS 12: Structural dynamics and computational model reduction**	**MS 14: Coping with uncertainty in computational mechanics**	**MS 5: Soft tissue mechanics: modelling and simulation**	**MS 7: Computational modelling of composite structures**	**MS 4: Multi-functional materials and coupled multi-field problems**
		Model reduction of the aeroelasticity of a wind turbine rotor blade I. Krukow; A. Zilian; D. Dinkler	*Spatial uncertainty in computational mechanics: An engineer's perspective* J. Cerneels; W. Verhaeghe; W. De Mulder; G. Konstantinou; D. Vandepitte; D. Moens	*Intervertebral disc modelling in the context of an overall human model on multiple scales* N. Karajan; O. Röhrle; T. Heidlauf; M. Sprenger; W. Ehlers; S. Schmitt; T. Rupp	*Higher order XFEM-modelling of material interfaces and cohesive cracks* S. Müller; M. Kästner; V. Ulbricht	*Inhomogeneities and stability aspects of electro-sensitive elastomer actuators* M. Klassen; B. X. Xu; R. Müller
16:10		*Analitical and numerical computations of tangent stiffness matrix in geometrically nonlinear analysis of thin-walled structures* S. Koczubiej	*Different aspects of experimental procedures used for identification of material parameters* D. Schellenberg; D. Juhre; J. Ihlemann	*On the coupling of 3D and 1D skeletal muscle models* M. Sprenger; O. Röhrle	*Modelling initiation and propagation of delamination in composites under dynamic loading using cohesive interface elements* M. May; S. Hiermaier	*Coupled formulation for polyelectrolyte gels for the application as actuators and sensors* K. Keller; B. Kröplin; T. Wallmersperger
16:30		*Computational model reduction by using high order toroidal finite elements for calculating disc springs* C. Wehmann; F, Nützel; F. Rieg	*An approach to deal with uncertainty* S. Becker; N. Gebbeken	*Microstructurally based skeletal muscle modelling* T. Heidlauf; O. Röhrle	*Prediction of failure in UD fibre reinforced composites: The Puck theory within FEA* H. M. Deuschle; A. Puck	*Electromechanics of polyurethane elastomers* A. Ask; M. Ristinmaa; A. Menzel
16:50			*Computational recovery of geometrical imperfections on flexible shell structures* F. D. Vogdt			*Macroscopic and mesoscopic contributions to the effective fracture toughness of ferroelectric materials* R. Gellmann; A. Ricoeur
17:10						
		Ball- & Brauhaus Watzke				
19:00		**Conference Dinner**				
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4th GACM Colloquium on Computational Mechanics

Friday, September 2

		Hörsaalzentrum (HSZ) 004			
09:00		**Keynote lecture**			
		Dr. Michael Gruenewald (EADS Innovation Works) „High speed computing in aerospace industry: Opportunities and challenges“			
10:00		**Coffee break**			
		HSZ 004	**HSZ 201**	**HSZ 204**	**HSZ 301**	**HSZ 405**
10:30	Parallel session VII	**MS 12: Structural dynamics and computational model reduction**	**MS 14: Coping with uncertainty in computational mechanics**		**MS 7: Computational modelling of composite structures**	**MS 4: Multi-functional materials and coupled multi-field problems**
		Damage indicators for response surface application in structural health monitoring system S. Ahmad; V. Zabel; M. Brehm	*Pattern recognition based parameterisation of random fields* S. Klostermann; D. Vogt; S. Lippert; O. von Estorff		*Textile reinforced concrete sandwich panels - FEA simulation of bending tests* J. Finzel; U. Häußler-Combe	*Life-time oriented modeling of concrete structures with a focus on reinforcement corrosion* M. Kemper; G. Meschke
10:50		*An automated and efficient implementation concept for shell elements with high computational performance in explicit time integration* C. Schmied; S. Mattern; K. Schweizerhof	*Effective modal analysis with uncertain material parameters* D. Kreuter; M. Beitelschmidt; K. Sepahvand		*The scaled boundary finite element method for the static analysis of arbitrary laminated Kirchhoff plates* R. Dieringer; W. Becker; J. Hebel	*Dynamics of fibers in an air-droplets multiphase flow* P. Diffo; P. Wulf; M. Breuer
11:10		*Certified reduced basis methods for parametrized parabolic partial differential equations with non-affine source terms* D. Klindworth; M. A. Grepl; G. Vossen	*Inelastic material behaviour represented by neural networks in finite element analysis* C. Zopf; S. Freitag; M. Kaliske		*Free vibrations of functionally graded beams resting on elastic foundation* P. D. Villamil; C. Zhang	*2D wave propagation in periodically layered composite structures with damages* M. V. Golub; Ch. Zhang
11:30			*Global sensitivity analysis for the efficient solution of optimization problem in design process* Z. Mehmood; U. Reuter			
		Hörsaalzentrum (HSZ) 004				
11:50		**Best Poster Award + Closing**				
12:10						

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