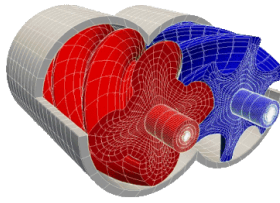


Modern Finite Element Technologies 2025
Aachen, 20 - 22 August 2025



COMAS

Thematic Conference



Conference Agenda

Session Overview

Date: Tuesday, 19/Aug/2025

6:00pm

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8:00pm

Welcome Reception

Location: Sky Lounge

Date: Wednesday, 20/Aug/2025

8:30am - 8:50am	Opening Location: Ford Auditorium, SuperC
8:50am - 9:50am	Session 1 Location: Ford Auditorium, SuperC Chair: Sven Klinkel Interpolations for the magnetic field - A comparison of H(curl) and Lagrange elements Maximilian Vorwerk ¹ , Mohammad Sarhil ² , Jörg Schröder ¹ 1: University of Duisburg-Essen, Germany; 2: TU Dortmund, Germany Benefits of Using Master-slave Elimination for Nonlinear Multi-point Constraints in Finite Element Analyses Jonas Boungard , Jens Wackerfuß University of Kassel, Germany Non-Conforming Dirichlet Boundary Conditions Using Master-Slave Elimination Julian Meyer , Michael Kaliske Institute for Structural Analysis, Technische Universität Dresden, Germany
9:50am - 10:20am	1st Coffee Break Location: Ford Auditorium, SuperC
10:20am - 11:10am	Recent Developments on the Isogeometric Analysis Paradigm by Angelos Mantzaflaris Location: Ford Auditorium, SuperC Chair: Margarita Chasapi
11:10am - 11:50am	Session 2 Location: Ford Auditorium, SuperC Chair: Margarita Chasapi Parametrization of Star-shaped Spline Elements Elio Skënderaj , Bert Jüttler Johannes Kepler University Linz, Austria An Efficient Static Condensation Procedure for Mixed Isogeometric Formulations Lisa Stammen , Wolfgang Dornisch RPTU Kaiserslautern-Landau
11:50am - 1:00pm	Lunch Break Location: Mensa Academica
1:00pm - 1:50pm	TDNNS mixed finite elements for solids and shells by Joachim Schöberl Location: Ford Auditorium, SuperC
1:50pm - 3:30pm	Session 3 Location: Ford Auditorium, SuperC Chair: Adam Sky Formulae and Transformations for Tensorial Finite Elements Adam Sky University of Luxembourg, Luxembourg A Reynolds-Robust Discretisation of the Navier–Stokes Equations via Enstrophy Stabilisation Boris D. Andrews ¹ , Matin Shams ¹ , Patrick E. Farrell ^{1,2} 1: University of Oxford, United Kingdom; 2: Charles University, Czech Republic Finite Element Form-valued Forms Kaibo Hu ¹ , Ting Lin ² , Qian Zhang ³ 1: University of Edinburgh, United Kingdom; 2: Peking University, China; 3: Michigan Technological University, USA Discretizing Linearized Einstein-Bianchi System by Symmetric and Traceless Tensors Yuyang Guo , Jun Hu , Ting Lin Peking University, China, People's Republic of A Construction of Canonical Nonconforming Finite Element Spaces for Elliptic Equations of Any Order in Any Dimension Jia Li , Shuonan Wu School of Mathematical Sciences, Peking University, Beijing, P.R.China
3:30pm - 4:00pm	2nd Coffee Break Location: Ford Auditorium, SuperC
4:00pm - 5:40pm	Session 4 Location: Ford Auditorium, SuperC Chair: Maximilian Vorwerk A Taylor-Series-based Reduced Integration Stabilization Technique for Large Deformations Hagen Holthusen ¹ , Njomza Pacolli ² , Stefanie Reese ³ 1: FAU Erlangen-Nuremberg, Germany; 2: RWTH Aachen University, Germany; 3: University of Siegen, Germany The Virtual Element Method for Static and Dynamic Crack Analysis Philipp Wappler , Kevin Schmitz , Andreas Ricoeur University of Kassel, Germany Dual-Mesh Phase-Field Method For Brittle Fracture Employing Polygonal Finite Elements Tomislav Jarak ^{1,2} , Krešimir Jukić ² , Antolin Lorenzana Iban ¹ 1: University of Valladolid, Spain; 2: University of Zagreb, Croatia On a Triangular Self-Stabilized Virtual Element for Thin Shells Tiago Wu , Paulo Pimenta University of São Paulo, Brazil An Adaptive Mesh Reorientation Algorithm to Improve Crack Path Prediction Reliability in 2D and 3D Fracture Analyses using Cohesive Zone Models Koussay Daadouch , Vladislav Gudžulić , Günther Meschke Ruhr University Bochum, Germany

Date: Thursday, 21/Aug/2025

8:30am - 9:50am	Session 5 Location: Ford Auditorium, SuperC Chair: Jeremias Nathanael Arf Computationally Simple And Efficient Locking Alleviation In Isogeometric Thin Shells Lennart Stöttelder , Sauer Roger A. Sauer Ruhr-Universität Bochum, Germany A Cubic Triangular Multilayer Kirchhoff-Love Shell Element with Shear Stress Analysis Gustavo Canário Gomes ¹ , Paulo Pimenta ¹ , Adnan Ibrahimbegovic ² 1: University of São Paulo, Brazil; 2: Université de Technologie de Compiègne/Alliance Sorbonne Université Investigation of Nonlinear Locking Phenomena in Novel Stabilized Mixed Element Formulations Henrik Jakob , Tarun Kumar Mitruka Vinod Kumar Mitruka , Simon Bieber , Manfred Bischoff University of Stuttgart, Institute for Structural Mechanics, Pfaffenwaldring 7, 70550 Stuttgart, Germany An Efficient Rodrigues Rotation Parameters Based Geometrically-Exact Nonlinear Shell Formulation Cinthia A. G. Sousa ^{1,2} , Maximilian Vorwerk ¹ , Paulo M. Pimenta ² , Jörg Schröder ¹ 1: University of Duisburg Essen, Germany; 2: Polytechnic School at University of São Paulo
9:50am - 10:20am	1st Coffee Break Location: Ford Auditorium, SuperC
10:20am - 11:10am	Intrinsically Selective Mass Scaling with Hierarchic Shell Formulations by Manfred Bischoff Location: Ford Auditorium, SuperC Chair: Sven Klinkel
11:10am - 11:50am	Session 6 Location: Ford Auditorium, SuperC Chair: Sven Klinkel Analysis-Suitability Of Nonlinear Reissner–Mindlin Shell Formulation With Drilling Rotations For Multi-Patch Isogeometric Analysis Jeremias Nathanael Arf ¹ , Mathias Reichle ² , Myung-Jin Choi ² , Sven Klinkel ² , Bernd Simeon ¹ 1: RPTU Kaiserslautern-Landau, Germany; 2: RWTH Aachen University, Germany A Family of Index-Reduced Stable Intrinsically Locking-Free Hierarchic Shell Formulations Tarun Kumar Mitruka Vinod Kumar Mitruka , Manfred Bischoff University of Stuttgart, Institute for Structural Mechanics, Pfaffenwaldring 7, 70550 Stuttgart, Germany
11:50am - 1:00pm	Lunch Break Location: Mensa Academica
1:00pm - 1:50pm	A Scaled Boundary Finite Element Framework for Modern Computational Engineering Analysis by Chongmin Song Location: Ford Auditorium, SuperC Chair: Carolin Birk
1:50pm - 3:30pm	Session 7 Location: Ford Auditorium, SuperC Chair: Hauke Gravenkamp Polygon Elements For Phase-field Modelling Of Fracture In Brittle Polycrystals Carolin Birk ¹ , Ajay Kumar Pasupuleti ¹ , Hirshikesh Hirshikesh ² , Sundararajan Natarajan ³ 1: University of Duisburg-Essen, Germany; 2: Indian Institute of Technology Jodhpur; 3: Indian Institute of Technology Madras Trimming in Isogeometric Scaled Boundary Analysis for Planar Linear Elasticity Mathias Reichle , Sven Klinkel RWTH Aachen University, Germany Fast Automatic Discretization and Analysis of Solids Based on the Isogeometric Scaled Boundary Approach David Teran ¹ , Julius Nehring-Wirxel ² , Leif Kobbelt ² , Margarita Chasapi ¹ 1: Chair of Structural Analysis and Dynamics, RWTH Aachen University; 2: Visual Computing Institute, RWTH Aachen University From Polygonal Plates to Flat-Facet Shell Elements With Assumed Natural Strains in the Scaled Boundary Finite Element Framework Anna Hellers , Mathias Reichle , Sven Klinkel RWTH Aachen University, Germany Accurate and Automated Handling of Moving Boundaries in Fluid Flow Simulation Marek Behr Chair for Computational Analysis of Technical Systems, RWTH Aachen University, Germany
3:30pm - 4:00pm	2nd Coffee Break Location: Ford Auditorium, SuperC
4:00pm - 5:40pm	Session 8 Location: Ford Auditorium, SuperC Chair: Sascha Eisenträger Power Diagram Optimization with Respect to Anisotropic Sizing Constraints Alisa Rozdestvenskyte , Pascal Meyer , Leif Kobbelt RWTH Aachen University, Germany Adaptive Parallel Space-time Discontinuous Galerkin Methods For The Linear Transport Equation Christian Wieners KIT - Karlsruhe Institute of Technology, Germany A Quasi-asymptotically-preserving Formulation of Highly Anisotropic Diffusion Problems in the Hybridizable Discontinuous Galerkin Framework Michel Mehrenberger ¹ , Tuan Dung Nguyen ¹ , Eric Serre ² , Frédéric Schwander ² 1: Aix-Marseille Université, Institut de Mathématiques de Marseille, CNRS UMR 7373, Marseille, France; 2: Aix-Marseille Université, Centrale Méditerranée, Laboratoire de Mécanique, Modélisation et Procédés Propres, CNRS UMR 7340, Marseille, France An Improved Immersed Finite Element Method for Multilayer Heat Transfer Problems Mohamed Ben Romdhane Abdullah Al Salem University, Kuwait Understanding Biological Systems Through Fluid-Structure Interaction Modeling Abdelilah RBAH , Elie HACHEM , Aurélien LARCHER Mines Paris – PSL, France
7:00pm - 11:00pm	Conference Dinner Location: Restaurant Eisenbrunnen

Date: Friday, 22/Aug/2025

8:30am - 9:50am	Session 9 Location: Ford Auditorium, SuperC Chair: Hagen Holthusen Stabilized Finite Elements and Their Application to Dispersed Multiphase Flows Hauke Gravenkamp¹, Ramon Codina^{2,3}, Javier Principe^{2,3} 1: Otto von Guericke University Magdeburg, 39106 Magdeburg, Germany; 2: International Centre for Numerical Methods in Engineering, 08034 Barcelona, Spain; 3: Universitat Politècnica de Catalunya, 08034 Barcelona, Spain Mesh Distortion Resistant Serendipity Elements: Unsymmetric Formulation Sascha Eisentträger Otto von Guericke University Magdeburg, Germany Petrov-Galerkin Finite Elements in Elastodynamics: A Novel Two-Field Approach Felix Zählinger, Peter Betsch Karlsruhe Institute of Technology, Germany A Stabilization Technique Based on Reduced Integration for Virtual Elements at Finite Strains Njomza Pacolli¹, Bjorn Sauren¹, Jannick Kehls¹, Sven Klinkel¹, Stefanie Reese², Hagen Holthusen³ 1: RWTH Aachen University, Germany; 2: University of Siegen, Germany; 3: FAU Erlangen-Nuremberg
9:50am - 10:20am	Coffee Break Location: Ford Auditorium, SuperC
10:20am - 11:40am	Session 10 Location: Ford Auditorium, SuperC Chair: Christian Wieners Development Of Well-conditioned And Optimally Convergent High-order Generalized/eXtended Finite Element Methods Exploring Hierarchical Bases Heloisa Zanardi¹, Murilo H. C. Bento¹, Patrick O'Hara², Sergio P. B. Proença¹ 1: Department of Structural Engineering, São Carlos School of Engineering, University of São Paulo – Brazil; 2: Structural Sciences Center, Air Force Research Laboratory – USA Solving an X-FEM Discretization of Two-Dimensional Thermal Homogenization Problems With a Fast Fourier Transform Based Method Flavia Gehrig¹, Matti Schneider^{1,2} 1: University of Duisburg-Essen, Essen, Germany; 2: Fraunhofer Institute for Industrial Mathematics ITWM, Kaiserslautern, Germany Optimization of a Rigid Baffle in a Liquid Filled Tank to Limit Sloshing Using Xfem and a Surrogate Model Antoine Legay, Luc Laurent, Christophe Hoareau Conservatoire national des arts et métiers, France Solution Strategies for the Cahn-Hilliard-Biot Model Cedric Riethmüller¹, Erlend Storvik² 1: University of Stuttgart, Germany; 2: Western Norway University of Applied Sciences, Norway
11:40am - 12:00pm	Closing Location: Ford Auditorium, SuperC