Thirteenth International Conference on Isogeometric Analysis

IGA 2025

14-17 September, 2025
Eindhoven, The Netherlands

PROGRAMME

IGA 2025 CONGRESS
The Thirteenth International Conference on Isogeometric Analysis (IGA 2025)

PROGRAMME

Eindhoven, The Netherlands
14 – 17 September, 2025

Greetings from the ISOGEOMETRIC ANALYSIS 2025 Conference Chairs

We are delighted to present the program for the **13th edition of the International Conference on Isogeometric Analysis (IGA 2025)**, taking place in Eindhoven, The Netherlands, from September 14–17, 2025.

IGA 2025 showcases the vibrant and diverse international isogeometric analysis community, with contributions from over 31 countries. The program features 135 presentations, including 6 plenary lectures, 27 invited sessions, and a panel discussion on the industrial application of IGA—highlighting the vitality and scientific depth of the field.

The contributions span a wide array of topics in isogeometric analysis, including biomedical applications; design space exploration, optimization, and uncertainty quantification; industrial applications of IGA; and IGA for solids and structures. Further themes include adaptive spline technologies; trimming, immersed, and non-conforming methods; isogeometric boundary element methods; and the mathematics of IGA. The program also features work on coupled problems, interfaces and contact, fast formation and solution techniques, thin structures, fluids and fluid-structure interaction, and phase-field modeling. In addition, it explores unstructured spline technologies and emerging frontiers in IGA such as reduced-order modeling, machine learning, digital twins, and beyond.

We extend our sincere gratitude to all authors whose contributions form the core of this event, to the members of the International Scientific Committee, and to the organizers of the minisymposia for their dedication in shaping a high-quality technical program. We also thank our sponsors: Beta Simulation Technologies, the TU Delft Institute for Computational Science and Engineering, the Dutch Research Council (NWO), and the 4TU Federation.

We hope this conference will inspire new ideas, foster collaborations, and stimulate future developments in the field of isogeometric analysis. We wish you an excellent conference experience and hope you enjoy both the scientific program and your stay in The Netherlands.

Warm regards,

The IGA 2025 Conference Chairs

Harald Van Brummelen, Clemens Verhoosel, Matthias Möller, Deepesh Toshniwal

ACKNOWLEDGEMENTS

The conference organizers acknowledge the support towards the organization of IGA 2025 to the following organizations:

ORGANIZERS AND COMMITTEES

Conference Chairs:

[Harald van Brummelen](#)

Eindhoven University of Technology, The Netherlands

[Clemens Verhoosel](#)

Eindhoven University of Technology, The Netherlands

[Matthias Möller](#)

Delft University of Technology, The Netherlands

[Deepesh Toshniwal](#)

Delft University of Technology, The Netherlands

Scien i ic Committee:

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Fehmi CirakUniversity of Cambridge, UK
Gershon Elber Technion University, Israel
Stefanie Elgeti TU Wien, Austria
Thomas Elguedj Université de Lyon, France
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Hector Gomez Purdue University, US
Ming-Chen Hsu Iowa State University, US
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Josef Kiendl University of the Bundeswehr Munich, Germany
Artem Korobenko University of Calgary, Canada
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Mats Larson Umea University, Sweden
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Jessica Zhang Carnegie Mellon University, US

CONFERENCE SECRETARIAT

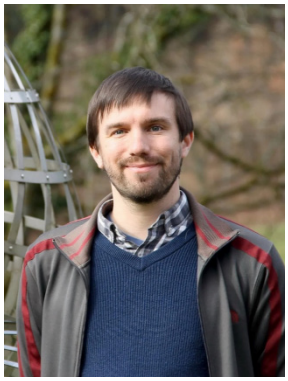
CIMNE Congress Bureau

Campus Nord UPC
Building C1 - Office C4
Gran Capità, S/N 08034 Barcelona, Spain
Tel. +34 93 405 4694
Tel. +34 93 405 4696

Conference Secretariat: IGA@cimne.upc.edu
Payments & invoices: financialsupport@cimne.upc.edu

INVITED SPEAKERS

Plenary Speakers:

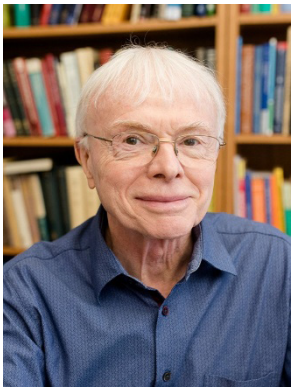


John A. Evans
University of Colorado Boulder, USA

Isogeometric Collocation Methods for Fluid Mechanics

Hector Gomez
Purdue University, USA

Computers are still bad at predicting multiphase flows: How IGA can help



Thomas J. Hughes
The University of Texas at Austin, USA

Isogeometric Analysis at its Twentieth Anniversary

Giancarlo Sangalli
University of Pavia, Italy

Isogeometric Analysis in Space and Time

Semi-Plenary Speakers:

Monica Montardini
University of Pavia, Italy

Low-rank methods in Isogeometric Analysis

Espen Sande
EPFL, Lausanne, Switzerland

Mass lumping and outlier removal strategies for immersogeometric analysis

MINISYMPOSIA

MS001 IGA for biomedical applications
S. Morganti (University of Pavia, Italy), L. Dedè (Politecnico of Milan, Italy) and M. Hsu (Iowa State University, United States)

MS002 Design Space Exploration, Optimization, and Uncertainty Quantification
S. Elgeti (TU Wien, Austria), J. Evans (University of Colorado Boulder, United States), G. Elber (Technion, Israel Institute of Technology, Israel) and O. Weeger (TU Darmstadt, Germany)

MS003 Industrial Applications of IGA
T. Dokken (SINTEF Digital, Norway), Y. Bazilevs (School of Engineering, Brown University, United States) and M. Sederberg (Coreform, United States)

MS004 IGA for Solids and Structures
A. Reali (University of Pavia, Italy), R. de Borst (University of Sheffield, United Kingdom), L. De Lorenzis (ETH Zurich, Switzerland) and T. Elguedj (INSA Lyon, France)

MS005 Adaptive Spline Technologies
C. Giannelli (University of Florence, Italy), C. Manni (University of Rome "Tor Vergata"", Italy), H. Speleers (University of Rome "Tor Vergata"", Italy) and R. Vázquez (University of Santiago de Compostela, Spain)

MS006 Trimming, Immersed, And Non-Conforming Methods
B. Marussig (Graz University of Technology, Austria), R. Bouclier (ICA, INSA-Toulouse, Université de Toulouse, France), M. Larson (Umeå University, Sweden) and E. Rank (Technical University of Munich, Germany)

MS007 Isogeometric Boundary Element Methods
M. Sampoli (University of Siena, Italy), S. kurz (ETH Zürich, Switzerland), S. Schöps (Technische Universitaet Darmstadt, Germany) and A. Sestini (University of Florence, Italy)

MS008 Mathematics of Iga
D. Toshniwal, E. Sande , T. Takacs and G. Sangalli (University of Pavia, Italy)

MS009 IGA for Coupled Problems, Interfaces and Contact
R. Sauer (Ruhr University Bochum, Germany), F. de Prenter (Delft University of Technology, Netherlands) and B. Uekermann (University of Stuttgart, Germany)

MS010 Fast Formation and Solution Techniques

R. Hiemstra (Eindhoven University of Technology, Netherlands), V. Calo (Curtin University, Australia), A. Mantzaflaris (Inria at Université Côte d'Azur, France) and P. Antolin (École Polytechnique, Switzerland)

MS011 IGA for thin structures

B. Oesterle (Hamburg University of Technology, Germany), J. Kiendl (University of the Bundeswehr Munich, Germany), H. Verhelst (University of Florence, Italy) and W. Dornisch (RPTU Kaiserslautern-Landau, Germany)

MS012 IGA for Fluids and Fluid-Structure Interaction

A. Korobenko (University of Calgary, Canada), E. Johnson (University of Notre Dame, United States) and H. van Brummelen (Eindhoven University of Technology, Netherlands)

MS013 IGA for phase-field modeling

M. ten Eikelder (TU Darmstadt, Germany), S. Stoter (TU Eindhoven, Netherlands), C. Verhoosel (TU Eindhoven, Netherlands) and H. Gomez (Purdue University, United States)

MS014 Unstructured Spline Technologies

F. Cirak (University of Cambridge, United Kingdom), M. Scott (Coreform, United States) and J. Zhang (Carnegie Mellon University, United States)

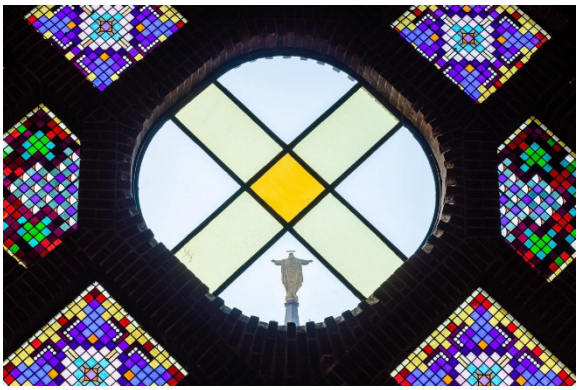
MS015 New IGA Frontiers: ROM, ML, Digital Twins, and Beyond

M. Möller (Delft University of Technology, Netherlands), T. Kvamsdal (Norwegian University of Science and Technology, Norway) and A. Buffa (École Polytechnique Fédérale de Lausanne, Switzerland)

PRACTICAL INFORMATION

CONFERENCE VENUE

IGA 2025 will take place in the prestigious DOMUSDELA complex, right in the heart of the dynamic design city of Eindhoven. A redevelopment of the former Mariënhage monastery, a monumental building of the Order of St. Augustine and one of the oldest buildings in Eindhoven, a hidden gem of the city.



Monastery Mariënhage shapes the setting for meaningful meeting. Traditionally this building breathes hospitality. For centuries the Augustines received their guests with the words “Welcome, nice to have you here!”. That is the tradition on which DOMUSDELA carries on!

REGISTRATION

Registration will begin on **Sunday, September 14th, 2025**, from **16:30 to 20:00**, at the **foyer of DOMUSDELA**. Signage will be available to guide you to the exact location.

Registration will continue on **Monday, September 15th**, starting at **08:00** while on Tuesday the registration will start at 8.30.

To register, please present your **Registration Code** at the registration desk. You will then receive your **conference badge**.

Please remember to **wear your badge at all times** during the conference, as it is required for access to all sessions and events.

Secretariat Desk Timetable:

- **Monday, September 15th:** 08:00 to 12:45 / 14:00- 17:30
- **Tuesday, September 16th:** 08:30 to 12:45 / 14:00- 17:00
- **Wednesday, September 17th:** 09:00 to 16:00

PRESENTATIONS

The technical programme of **IGA 2025 consists of 135 presentations, including 6 plenary lectures, 27 invited sessions, and a panel discussion.**

Time:

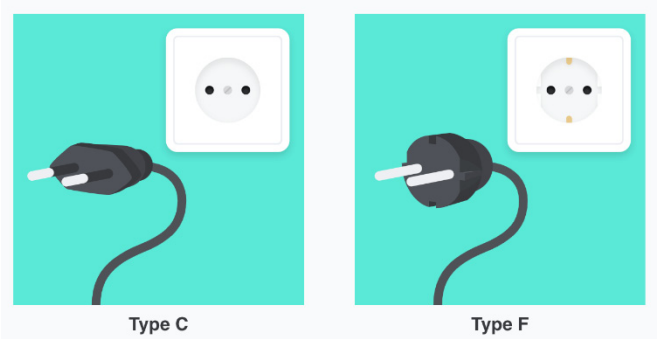
Each contributed talk will last **20 minutes and plenary lectures will be 40 minutes long.** These durations include time for Q&A.

Equipment:

Speakers are kindly requested to use their own laptop for presentations. **Each session room is equipped with a large presentation screen with HDMI connection.** Please ensure that you bring your own adapter, if necessary. We strongly recommend saving a copy of your presentation on a USB drive as a backup.

Power sockets and plug converters for electricity:

The power supply in the Netherlands operates at **230V and 50Hz**. The common electric sockets are types C and F (see below). Both types have two round pins. You may need a power plug travel adapter to use your devices.



COFFEE & LUNCH BREAKS

Coffees and lunches will be served at the conference venue.

SOCIAL PROGRAMME

Welcome reception, Sunday 14/09/2025, 16:30 - 20:00

On Sunday afternoon participants are welcomed at **the Domus Dela conference venue for the welcome reception**. The registration desk will be open during this informal get together.

Conference dinner, Tuesday 16/09/2025, 19:00 - 22:00

On Tuesday evening the conference dinner will take place at **Fifth NRE, a unique spot on Eindhoven's former Nutsbedrijven Regio Eindhoven (NRE) grounds**, once home to the city's public utilities, now transformed into a vibrant place for culture, creativity, and events. Fifth is at walking distance from the conference venue.

EMERGENCY CALLS

There are a range of **emergency numbers** at your disposal that you can call for free based on your needs:

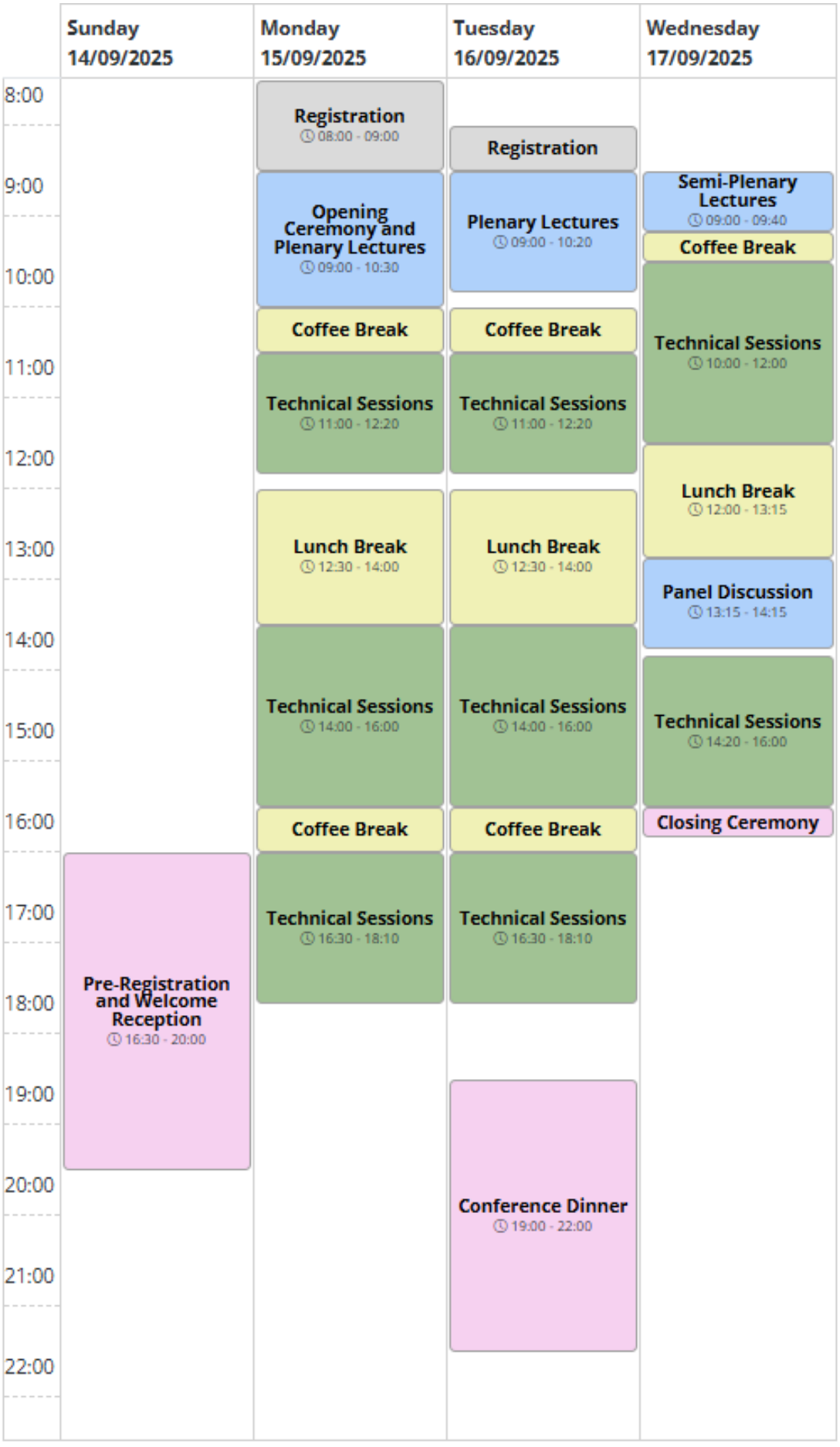
- **112** – The **general emergency number** for the **police, fire brigade, or ambulance**. Use it only in **life-threatening** situations. Free of charge and available EU-wide.
- **0900 8844** – **Non-emergency police line**
- **0900 8861** – **After-hours doctor service** (huisartsenpost)
- **0900 1515** – **Other non-urgent medical services**

Taxi Numbers in Eindhoven

- **Eindhovense Taxi Dienst**
  +31 (0)40 211 0000
  eindhovensetaxidienst.nl

- **TaxiStar Eindhoven**
  +31 (0)40 200 2222
  taxistar.nl

TECHNICAL PROGRAMME OVERVIEW



IGA2025
Technical Programme

Last updated: 2025-09-09 10:53

Sunday, 14/09/2025

Sun, 14/09/2025 16:30 - 20:00

Pre-Registration and Welcome Reception

Monday, 15/09/2025

Mon, 15/09/2025 08:00 - 09:00

Registration

Mon, 15/09/2025 09:00 - 10:30 — De Paterskerk

Opening Ceremony and Plenary Lectures

Chaired by: Prof. Harald van Brummelen (Eindhoven University of Technology), Dr. Matthias Möller (Delft University of Technology)

Isogeometric Analysis at its Twentieth Anniversary

***T. Hughes**

Isogeometric Collocation Methods for Fluid Mechanics

***J. Evans**

Mon, 15/09/2025 10:30 - 11:00

Coffee Break

Mon, 15/09/2025 11:00 - 12:20 — De Paterskerk

MS004A - IGA for Solids and Structures I

Main Organizer: Prof. Alessandro Reali (University of Pavia)
Chaired by: Prof. Thomas Elguedj (INSA-Lyon / Lamcos)

Recent Developments in IGA for Architected Materials and Structures Keynote

***Y. Bazilevs**

Isogeometric Analysis for Explicit Propagation of Seismic Waves in Poro-elastic Media

***M. Hodzelmans,** J. Remmers, C. Verhoosel

Surface and Strain-Gradient Driven Mechanics of Soft Materials Using Isogeometric Analysis

J. Wang, A. Umurhan, ***B. Dortdivanlioglu**

Minimum Weight Topology Optimization of 3D Continuum Structures with Stress Constraints using Isogeometric Analysis

***J. París,** D. Villalba, I. Couceiro, M. Rey, F. Navarrina

Mon, 15/09/2025 11:00 - 12:20 — Walter

MS006A - Trimming, Immersed, And Non-Conforming Methods I

Main Organizer: Dr. Benjamin Marussig (Graz University of Technology)
Chaired by: Dr. Benjamin Marussig (Graz University of Technology)

Resolving Cross-Talk in Immersed Isogeometric Shell Analysis : A Comparative Study of Selective Control Point Duplication and Adaptive Local Refinement

***Z. Lian,** C. Hollweck, L. Leidinger, S. Hartmann, F. Bauer, R. Wüchner

The Immersed Boundary-Conformal Method for shell structural analysis

***G. Guarino,** A. Buffa, P. Antolin

Embedded Mesh Methods for Coupling Cartesian Meshes and Tailored Isogeometric Boundary Layers in Contact Problems

***E. Loera Villeda,** I. Steinbrecher, A. Popp

Analysis-Aware Defeaturing of Dirichlet Features in Poisson Problems

***P. Weder,** A. Buffa

Mon, 15/09/2025 11:00 - 12:20 — Louis

MS013A - IGA for phase-field modeling I

Main Organizer: Dr. Marco ten Eikelder (TU Darmstadt)
Chaired by: Dr. Stein Stoter (Eindhoven University of Technology)

Recent advances in diffuse-interface models for (soft-)wetting

***H. van Brummelen,** T. Demont, T. van Sluijs, S. Stoter, C. Verhoosel, J. Snoeijer, G. van Zwieten

Phase-field mixture flows: modeling and isogeometric discretization

***M. ten Eikelder,** H. van Brummelen, D. Schillinger

Higher order methods for space and time discretization for a Navier-Stokes-Cahn-Hilliard, diffuse-interface model

***T. van Sluijs,** H. van Brummelen, P. Behnoudfar, S. Stoter

Mon, 15/09/2025 12:30 - 14:00

Lunch Break

Mon, 15/09/2025 14:00 - 16:00 De Paterskerk

MS004B - IGA for Solids and Structures II

Main Organizer: Prof. Alessandro Reali (University of Pavia)
Chaired by: Prof. Thomas Elguedj (INSA-Lyon / Lamcos)

On the solution continuity in multipatch C0/C1 coupling using Isogeometric domain decomposition methods

A. Duval, ***A. Gagnaire,** D. Dureisseix, T. Elguedj

Singular Enrichments and Configurational Force Calculation for Fracture Simulation using IGA

***C. Lee,** G. Subbarayan

A Spline-Based Stress Function Approach for the Principle of Minimum Complementary Energy

***F. Key,** L. Freinberger

Accelerating Isogeometric Analysis of Solids with Neural Networks

***D. Teran,** M. Chasapi

Construction of an isogeometric mechanical twin from tomographic images of lattice structures

***D. BICHET,** R. Bouclier, J. Passieux, J. Périé

Spectral properties and preconditioning of Galerkin and Collocation Isogeometric approximations of acoustic wave problems

***E. Zampieri,** L. Pavarino, S. Scacchi

Mon, 15/09/2025 14:00 - 16:00 Jos

MS011A - IGA for thin structures I

Main Organizer: Prof. Bastian Oesterle (Hamburg University of Technology)
Chaired by: Prof. Bastian Oesterle (Hamburg University of Technology), Prof. Josef Kiendl (University of the Bundeswehr Munich)

A Wrinkling Model Based on the Spectral Decomposition of the Stress Tensor and the Mixed Wrinkling Criterion

***J. Kiendl,** D. Zhang

Robust CAD-Integrated Simulation of Shell Structures using Isogeometric B-Rep Analysis with combined Penalty and Nitsche-type Patch Coupling

***R. Aristio,** R. Wüchner

Nonlinear Reissner-Mindlin Shell Formulation for block-wise Scaled Boundary Parametrizations

***J. Arf,** M. Reichle, S. Klinkel, B. Simeon

Isogeometric Topology Optimization for Kirchhoff-Love Shell Structures Based on Subdivision Surfaces

Q. Pan, X. Zhai, H. Kang, X. Du, F. Chen

Towards the eigenvalue optimization of stiffened Kirchhoff-Love shells

***C. Chianese,** H. Verhelst, J. Li, M. Möller, F. Marmo

CAD-Integrated Isogeometric Topology Optimisation of an Aircraft Rear Fuselage Structure

***M. Friedrichs-Dachale,** M. Haupt, S. Heimbs

Mon, 15/09/2025 14:00 - 16:00 Walter

MS006B - Trimming, Immersed, And Non-Conforming Methods II

Main Organizer: Dr. Benjamin Marussig (Graz University of Technology)
Chaired by: Prof. Robin Bouclier (INSA Toulouse, France)

An Isogeometric Approach to Topology Optimization Combining Level-Set and Topological Derivatives

***G. Teixeira,** N. Krenn, P. Gangl, B. Marussig

Stabilized Isogeometric Topology Optimization on Trimmed Geometries

***H. Su,** X. Wei

On the efficiency of immersed boundary finite element methods for wave propagation problems

***T. Bürchner,** L. Radtke, P. Kopp, A. Düster, S. Kollmannsberger, E. Rank

A data-driven approach to cut-element quadrature using spline interpolation

***D. Schillinger,** M. Mika, S. Stoter, R. Hiemstra

Open-Source Benchmark Tool for Cut Element Integration

***B. Marussig,** M. Loibl, M. Toprak, G. Teixeira, F. Kummer, J. Kiendl

Mon, 15/09/2025 14:00 - 16:00 Louis

MS007A - Isogeometric Boundary Element Methods I

Main Organizer: Prof. Maria Lucia Sampoli (University of Siena)
Chaired by: Prof. Maria Lucia Sampoli (University of Siena), Prof. Sebastian Schöps (TU Darmstatd)

An IGA-BEM method for computing the vortex sheet in 3D lifting flows

A. Ginnis, K. Kostas, T. Gerostathis, C. Politis, P. Kaklis

H-matrix based iterative solution strategy for the multi-patch collocation IgA-BEM in 3D Helmholtz problems

L. Desiderio, G. D'inverno, M. Sampoli, A. Sestini

Time domain boundary elements based on the convolution quadrature method and isogeometric analysis

T. Kramer, B. Marussig, M. Schanz

Singularity extraction for nearly singular kernels in IGA-BEM

T. Kandu?

Determining the shape of arbitrary-shaped nanoelements from EM wave scattering

***M. Toleuova,** K. Kostas, N. Kaliyev, C. Valagiannopoulos

Mon, 15/09/2025 16:00 - 16:30

Coffee Break

Mon, 15/09/2025 16:30 - 18:10 De Paterskerk

MS004C - IGA for Solids and Structures III

Main Organizer: Prof. Alessandro Reali (University of Pavia)
Chaired by: Prof. Thomas Elguedj (INSA-Lyon / Lamcos)

An isogeometric high-order time and space-accurate formulation for the explicit dynamics of geometrically exact beams

***G. Ferri,** E. Marino

Retaining optimal convergence rates employing a dual static condensation procedure within a mixed isogeometric plate formulation

***L. Stammen,** W. Dornisch

Isogeometric analysis based on splerical B-spline interpolation for elastic articulated slender structures

L. Greco, A. Cammarata, D. Castello, ***M. Cuomo**

Efficient Computational Homogenization and Higher-Order Continuum Solutions via the FEM²/IGA² Framework

***A. Kandivakkam Sethuraman,** C. Hesch, S. Schuss, F. Schmidt

An Assessment of the Parallel Performance of PSYDAC in Solid and Structural Mechanics

***Y. Güçlü**

Mon, 15/09/2025 16:30 - 18:10 Jos

MS011B - IGA for thin structures II

Main Organizer: Prof. Bastian Oesterle (Hamburg University of Technology)
Chaired by: Prof. Josef Kiendl (University of the Bundeswehr Munich), Prof. Wolfgang Dornisch (RPTU Kaiserslautern-Landau)

Hybrid discretization approaches for alleviating membrane locking in isogeometric thin shells

R. Sauer, L. Stöttelder

An Isogeometric Assumed Natural Strain Method to Alleviate Locking in Solid Beams

A. Patton, L. Leonetti, J. Kiendl

Mitigating Locking in Isogeometric Shell Analysis Using Natural Strain Approaches and Bézier extraction

***L. Leonetti,** D. Magisano, G. Garcea

Intrinsically selective mass scaling for explicit dynamic isogeometric shell analysis

L. Krauß, R. Thierer, M. Bischoff, ***B. Oesterle**

Consistent mass scaling for multi-patch and trimmed isogeometric explicit dynamics

***S. Stoter,** H. van Brummelen, R. Hiemstra, T. Nguyen, F. de Prenter, D. Schillinger, C. Verhoosel

Mon, 15/09/2025 16:30 - 18:10 Walter

MS006C - Trimming, Immersed, And Non-Conforming Methods III

Main Organizer: Dr. Benjamin Marussig (Graz University of Technology)
Chaired by: Dr. Benjamin Marussig (Graz University of Technology)

A Physics-Agnostic Non-Intrusive Method for the Imposition of Strong Dirichlet Boundary Conditions on Unfitted Meshes

***J. Camarotti,** R. Rossi, R. Zorrilla, R. Wüchner

Polynomial Projection and Immersed Quadrature for Boundary-Condition Enforcement in Lattice Boltzmann

***F. De Prenter,** K. Hoefnagel, S. Hulshoff, D. Casalino

How to obtain optimal convergence rates in an isogeometric dual mortar formulation

***W. Dornisch,** J. Stöckler

Mon, 15/09/2025 16:30 - 18:10 Louis

MS014A - Unstructured Spline Technologies I

Main Organizer: Prof. Fehmi Cirak (University of Cambridge)
Chaired by: Prof. Fehmi Cirak (University of Cambridge), Dr. Stefan Takacs (Johannes Kepler University Linz)

Isogeometric Topology Optimization of Thin-Walled Structures with Complex Design Domains Keynote

X. Wei

Exactly and approximately C1-smooth unstructured splines for shell simulations

S. Zahra, T. Takacs

Mollified Approximants for Finite Elements and Collocation over Polytopic Discretisation

***D. Alfarisy,** L. Zuhal, F. Cirak, M. Ortiz, E. Febrianto

Hybrid Structure-Preserving Discretisations with C1 Multi-Patch Splines.

J. Dekker, A. Palha, D. Toshniwal

Tuesday, 16/09/2025

Tue, 16/09/2025 08:30 - 09:00

Registration

Tue, 16/09/2025 09:00 - 10:20 — De Paterskerk

Plenary Lectures

Chaired by: Dr. Clemens Verhoosel (Eindhoven University of Technology), Dr. Deepesh Toshniwal (Delft University of Technology)

Computers are still bad at predicting multiphase flows: How IGA can help

***H. Gomez**

Isogeometric Analysis in Space and Time

***G. Sangalli**

Tue, 16/09/2025 10:30 - 11:00

Coffee Break

Tue, 16/09/2025 11:00 - 12:20 — De Paterskerk

MS008A - Mathematics of Iga I

Main Organizer: Prof. Giancarlo Sangalli (University of Pavia, Italy)
Chaired by: Prof. Giancarlo Sangalli (University of Pavia, Italy), Dr. Deepesh Toshniwal (Delft University of Technology)

Advances in Tchebycheffian Isogeometric Methods

***C. Manni**

Isogeometric Analysis on Polar Domains With Corners: Error Estimates, Graded Mesh Refinement and Graded Collocation Keynote

P. Zilk, T. Apel

Quadrature Rules for Smooth Triangular Macro-Element Splines

***H. Speleers**

Using Line Geometry to Analyze Birational Trilinear Mappings

***B. Juettler**

Tue, 16/09/2025 11:00 - 12:20 — Walter

MS002A - Design Space Exploration, Optimization, and Uncertainty Quantification I

Main Organizer: Prof. Stefanie Elgeti (TU Wien)
Chaired by: Prof. John Evans (University of Colorado), Mr. Konstantin Key (TU Wien)

Design Optimization of CAD-Compliant Lattice Structures

S. Elgeti, M. Riegler, M. Kofler, K. Key

Inverse Identification of Material Property Fields in Heterogeneous Isogeometric Kirchhoff-Love Shells

B. ?azorczyk, R. Sauer

Shape and Parameter Optimization of Magnetocaloric Cooling Device with Isogeometric Analysis

Y. Elbadry, B. Balouchev, M. Wiesheu, S. Schoeps, O. Weeger

CAD Reconstruction of Free-Form Optimised Shapes with Subdivision Surfaces

B. Devresse, A. Geiser, K. Bletzinger, R. Wüchner

Riemannian Gradient Descent Along Geodesic Paths for Shape Optimization Using Isogeometric Analysis

***R. Rosandi,** B. Simeon

Tue, 16/09/2025 11:00 - 12:20 — Louis

MS014B - Unstructured Spline Technologies II

Main Organizer: Prof. Fehmi Cirak (University of Cambridge)
Chaired by: Prof. Fehmi Cirak (University of Cambridge), Dr. Deepesh Toshniwal (Delft University of Technology)

Parameterization-Informed Non-Uniform Almost C1 Splines

***K. Shepherd,** S. Otero, D. Toshniwal

Rational B-spline-like Forms on Triangulations

J. Grošelj, A. Šadl Praprotnik

Automated T-Splines Creation with Extraordinary Points via Hierarchical Domain Decomposition

J. Peixoto, R. Rangel, L. Martha

Optimally convergent smooth blended B-splines for unstructured quadrilateral and hexahedral meshes

K. Koh, D. Toshniwal, ***F. Cirak**

Tue, 16/09/2025 12:30 - 14:00

Lunch Break

Tue, 16/09/2025 14:00 - 16:00 — De Paterskerk

MS008B - Mathematics of Iga II

Main Organizer: Prof. Giancarlo Sangalli (University of Pavia, Italy)
Chaired by: Dr. Espen Sande (EPFL), Dr. Thomas Takacs (Johann Radon Institute for Computational and Applied Mathematics (RICAM))

Robust Preconditioning of Elliptic and Parabolic Optimal Control Problems using Isogeometric Analysis

K. Mardal, J. Sogn, ***S. Takacs**

Multigrid Methods for the Biharmonic Equation on Multi-patch Domains

***F. Hasanova,** T. Takacs

Matrix-based stability analysis of space-time isogeometric methods for the wave equation

***M. Ferrari,** S. Fraschini, G. Loli, I. Perugia

Efficient Quadrature for Boundary Element Spline Discretizations: A Classification-Free Approach

C. Bracco, ***F. Patrizi,** A. Sestini

A theoretical study on the effect of mass lumping on the discrete frequencies in immersogeometric analysis Keynote

I. Bioli, Y. Voet

Tue, 16/09/2025 14:00 - 16:00 — Jos

MS005A - Adaptive Spline Technologies I

Main Organizer: Prof. Carlotta Giannelli (University of Florence)
Chaired by: Mr. Rafael Vázquez (Universidade de Santiago de Compostela)

Isogeometric methods based on hierarchical Almost-C^1 splines

C. Bracco, C. Giannelli, M. Marsala, T. Takacs, D. Toshniwal

Adaptive Magnetohydrodynamics using THB-splines and p-boxes.

K. Dijkstra, D. Toshniwal

Refinement Strategies with A Posteriori Error Estimation in 2D Magnetostatic Isogeometric Analysis

A. Grendas, C. Köthe, B. Marussig

A Numerical Study on the Stability of the Hierarchical B-Spline Discrete de Rham Complex

***C. Goates,** K. Shepherd

An Adaptive Least Squares Method for Elliptic PDEs with Verified Error Bounds

U. Reif, B. Chu

Adaptive Isogeometric Analysis for volumetric phase-field simulations with application to brittle fracture

H. Verhelst, L. Venta Viñuela, ***A. Mantzaflaris,** C. Giannelli, A. Reali

Tue, 16/09/2025 14:00 - 16:00 — Walter

MS002B - Design Space Exploration, Optimization, and Uncertainty Quantification II

Main Organizer: Prof. Stefanie Elgeti (TU Wien)
Chaired by: Prof. John Evans (University of Colorado), Mr. Konstantin Key (TU Wien)

Spline-Based Uncertainty Quantification for Non-Linear Heat Conduction Problems

***R. Lima de Souza e Silva,** E. Quaeghebeur, C. Verhoosel

Topological optimization for isogeometric Kirchhoff-Love shells

***F. Hübner Scherer,** P. Eisenhardt, G. Allaire, A. Constantinescu

Robust Level Set Topology Optimization of Kirchhoff Love Shells using Isogeometric Analysis

***P. Eisenhardt,** F. Hübner Scherer, B. Wohlmuth, A. Constantinescu

Design optimization of static mixers based on microstructured geometries

***M. Riegler,** S. Elgeti

Tue, 16/09/2025 14:00 - 16:00 Louis

MS009A - IGA for Coupled Problems, Interfaces and Contact I

Main Organizer: Prof. Roger Sauer (Ruhr University Bochum)
Chaired by: Prof. Roger Sauer (Ruhr University Bochum), Dr. Frits de Prenter (TU Delft)

Immersed Isogeometric Analysis with Incremental Potential Contact

***Y. Mi**

A coupled thermo-viscoelastic IGA formulation to model programmed shape changing of complex beam systems

***F. Rahmani Karkevandi,** G. Ferri, E. Marino

Sharp-Interface Reaction-Diffusion Modeling using IGA with Applications to Microelectronic Assemblies

***C. Jois,** T. Mahata, G. Subbarayan

Modeling of Photopolymerization Processes in Inkjet Printing

***C. Bozdo?an,** H. van Brummelen, L. van der Velden

Modelling of Hydrodynamics in Wet Grinding using Isogeometric Analysis

***P. Thunich,** Y. Tong, M. Müller

Tue, 16/09/2025 16:00 - 16:30

Coffee Break

Tue, 16/09/2025 16:30 - 18:10 De Paterskerk

MS008C - Mathematics of Iga III

Main Organizer: Prof. Giancarlo Sangalli (University of Pavia, Italy)
Chaired by: Dr. Thomas Takacs (Johann Radon Institute for Computational and Applied Mathematics (RICAM)), Dr. Espen Sande (EPFL)

The prospects of interpolatory spline functions for mass lumping Keynote

Y. Voet, E. Sande, A. Buffa

Trace Theory Based Methodology For Constructing Optimal Concurrent Algorithms for integrating three-dimensional B-splineFfunctionsIintoMmachines With Shared memory such as GPU
A. Szyszka, P. Studzi?ski, S. Sumara, ***M. Wo?niak**

Stabilized Isogeometric Collocation for Incompressible Fluid Flow Problems

***M. Belardo,** J. Evans

Construction of exact refinements for the 2-dimensional HB/THB-spline de Rham complex

***D. Cabanas,** K. Shepherd, R. Vázquez, D. Toshniwal

Advances on tree/cotree methods in IGA

M. Mally, M. Merkel, S. Schöps, ***R. Vázquez**

Tue, 16/09/2025 16:30 - 18:10 Jos

MS005B - Adaptive Spline Technologies II

Main Organizer: Prof. Carlotta Giannelli (University of Florence)
Chaired by: Prof. Carla Manni (University of Rome Tor Vergata), Prof. Hendrik Speleers (University of Rome Tor Vergata)

A New Basis for Hierarchical B-splines

S. Zhong, B. Huang, F. Chen

Locally Refined Spline Methods and Properties of Resulting Spline Spaces

T. Dokken

Algorithms, data structures and applications for C^s-smooth RMB-splines of degree 2s+1

M. Pan, B. Jüttler

An Unified Approach to Truncated Decoupled Spline Spaces

B. Juettler, D. Mokris, F. Pelosi, M. Sampoli

Adaptive Optimization of Isogeometric Parameterizations Using Artificial Neural Networks

T. Takacs, D. Rios, F. Scholz

Tue, 16/09/2025 16:30 - 18:10 Walter

MS015A - New IGA Frontiers: ROM, ML, Digital Twins, and Beyond I

Main Organizer: Dr. Matthias Möller (Delft University of Technology)
Chaired by: Dr. Matthias Möller (Delft University of Technology), Prof. Trond Kvamsdal (Norwegian University of Science and Technology (NTNU))

Efficient Reduced Order Modelling Techniques for Isogeometric Analysis

***T. Kvamsdal,** E. Fonn, H. van Brummelen, J. Eftang, K. Johannessen, A. Rasheed

IGA-LBM: Isogeometric Lattice Boltzmann Method

***Y. Ji,** M. Lacatus, M. Möller

Isogeometric Analysis for the Pricing of Financial Derivatives with Nonlinear Models: Convertible Bonds and Options

R. Kazbek, ***Y. Erlangga,** Y. Amanbek, D. Wei

Neural Green's Operators for Parametric Partial Differential Equations

M. Abdelmalik, H. Melchers, J. Prins

Perception-Enhanced Response Prediction of the Squeeze Flow of Soft Matter Under Robotic Manipulation

***S. Weerathunge,** N. Jaensson, A. Saccon, C. Verhoosel

Tue, 16/09/2025 16:30 - 18:10 Louis

MS001A - IGA for biomedical applications I

Main Organizer: Prof. Simone Morganti (University of Pavia)
Chaired by: Prof. Simone Morganti (University of Pavia)

Isogeometric patient-specific cardiac analysis of ventricular tachycardia

R. Willems, O. van der Sluis, C. Verhoosel

Coupled cardiac electro-mechanics simulated via isogeometric approaches

***M. Torre,** S. Morganti, F. Pasqualini, A. Reali

Developing an Image-Informed Computational Framework for Subject-Specific Modeling and Prediction of Glymphatic Transport and Amyloid Deposition

D. Bakiler, M. Johnson, M. Abdelmalik, F. Baidoo, A. Badachhape, T. Hughes, S. Hossain

Reducing Stress Shielding of Implants using Lattice Structures

K. Key, C. Meinke, S. Elgeti

Tue, 16/09/2025 19:00 - 22:00

Conference Dinner

Wednesday, 17/09/2025

Wed, 17/09/2025 09:00 - 09:40 — De Paterskerk

Semi-Plenary Lectures

Chaired by: Dr. Deepesh Toshniwal (Delft University of Technology)

Low-rank methods in Isogeometric Analysis

***M. Montardini**

Mass lumping and outlier removal strategies for immersogeometric analysis

***E. Sande**

Wed, 17/09/2025 09:40 - 10:00

Coffee Break

Wed, 17/09/2025 10:00 - 12:00 — De Paterskerk

MS010A - Fast Formation and Solution Techniques I

Main Organizer: Phd. Rene Hiemstra (TUE)
Chaired by: Phd. Rene Hiemstra (TUE)

Fast Space-time IsoGeometric solvers for nonlinear transient heat transfer problems

T. Elguedj, J. Cornejo-Fuentes, G. Sangalli, M. Tani, A. Duval, D. Dureisseix

Preconditioned continuous and discontinuous Galerkin spline approximations of time dependent electromagnetic problems in multi-patch domains

B. Kapidani, ***G. Loli,** G. Sangalli, M. Tani, R. Vázquez

Space-time least squares approximation for Schrödinger equation and efficient solver

A. Bressan, ***A. Kushova,** G. Sangalli, M. Tani

High-Performance Aspects of Galerkin Methods for Nonlinear Integral Operators with Continuous Symmetries

M. Abdelmalik, R. Hiemstra, ***T. Keßler**

Matrix-free inexact preconditioning techniques for discretizations on structured grids

***M. Mika,** R. Hiemstra, D. Schillinger

A Low-Rank Tensor approach for Local Refinement in IGA

T. Riemer, M. Stoll

Wed, 17/09/2025 10:00 - 12:00 — Jos

MS003A - Industrial Applications of IGA I

Main Organizer: Dr. Tor Dokken (SINTEF Digital)
Chaired by: Dr. Tor Dokken (SINTEF Digital), Dr. Clint Nicely (Raytheon)

Isogeometric and Immersogeometric Analysis with FEniCSx: A Python Library Framework

***P. Antolin**

Geometry plus Simulation Modules: A versatile open-source library for isogeometric analysis

***A. Mantzaflaris,** D. Mokriš, M. Möller, H. Verhelst

GoTools - a Tool for Locally Refined Splines in IGA

V. Skytt

IGA in LS-DYNA: Studies and Applications

***L. Leidinger,** S. Hartmann

IGA in LS-DYNA: Recent developments

***S. Hartmann,** L. Leidinger, D. Benson, L. Li, A. Nagy, M. Pigazzini, L. Nguyen

Wed, 17/09/2025 10:00 - 12:00 Walter

MS012A - IGA for Fluids and Fluid-Structure Interaction I

Main Organizer: Prof. Artem Korobenko (University of Calgary)
Chaired by: Dr. Ido Akkerman (TU Delft), Dr. Michael Abdemalik (Eindhoven University of Technology)

On the synergy between weak enforcement of boundary conditions and divergence-conforming NURBS

***I. Akkerman**

Hydrodynamic Discretizations of the Linearized Boltzmann Equation

F. Baidoo, I. Gamba, T. Hughes, ***M. Abdelmalik**

Efficient characteristic-Galerkin isogeometric solver for miscible displacement in porous media

I. Asmouh

Geometrically Parameterized Reduced-Order Model for Linear Sloshing Analysis Using IGA

C. Hoareau, J. Deü, R. Ohayon, T. Landi, R. Citarella

An immersed vibro-acoustic approach from computer aided design geometry using IGA

T. Landi, C. Hoareau, R. Citarella, J. Deü, R. Ohayon

Isogeometric Analysis-Based Partitioned Fluid-Structure Interaction with Analysis-Suitable, Fully Coupled Mesh Generation

***J. Li,** Y. Ji, H. Verhelst, M. Möller

Wed, 17/09/2025 12:00 - 13:15

Lunch Break

Wed, 17/09/2025 13:15 - 14:15

Panel Discussion

Wed, 17/09/2025 14:20 - 16:00 De Paterskerk

MS010B - Fast Formation and Solution Techniques II

Main Organizer: Phd. Rene Hiemstra (TUE)
Chaired by: Phd. Rene Hiemstra (TUE)

A Low-Rank Approach to Hierarchical B-spline Matrix Assembly

C. Giannelli, A. Mantzaflaris, ***M. Matucci**

High-performance isogeometric analysis of lattice structures

C. Guillet, T. Hirschler, P. Jolivet, P. Antolin, R. Bouclier

pdating the GLT analysis: new tools, applications to IgA, and beyond

S. SERRA-CAPIZZANO

Efficient \textit{rh}-adaptive IsoGeometric Analysis Using Optimal Transport

***M. Bahari,** A. Mantzaflaris

IETI-DP Solvers for Continuous Galerkin Isogeometric Analysis on multi-patch domains with non-matching interfaces

S. Tyoler, S. Takacs

Wed, 17/09/2025 14:20 - 16:00 Jos

MS003B - Industrial Applications of IGA II

Main Organizer: Dr. Tor Dokken (SINTEF Digital)
Chaired by: Prof. Yuri Bazilevs (Brown University), Dr. PANAGIOTIS KAKLIS (University of Strathclyde)

Intermetallic Growth and Bridging in Solder Microbumps

C. Jois, ***T. Mahata,** G. Subbarayan

Enhancing Precision of ‘As Manufactured’ Parts through Isogeometric Analysis and Point Cloud Data Integration

***C. Nicely,** M. Scott, K. Tew, G. Vernon

Isogeometric Analysis, pre - processing case studies with ANSA

I. Chalkidis, L. Rorris, T. Giannopoulos, C. Fountoukidou, E. Papaefstathiou

T-Splines Adaptive Mesh Refinement for Shock Wave Tracking

***S. Mikawa,** K. Takizawa, T. Terahara, T. Tezduyar

Application of Isogeometric Analysis in Aero-Engine Modeling and Dynamic Simulations

Z. Naveed, B. Beirow, K. Singh

Wed, 17/09/2025 16:00 - 16:20 De Paterskerk

Closing Ceremony

CIMNE