

Joint Workshop on Topology Optimization

June 05–06, 2025

Ruhr University Bochum

jointly organized by

- **Research Group Linkage Programme** between Prof. Dr. Klaus Hackl, Chair of Mechanics – Materials Theory, Ruhr University Bochum, and Prof. Dr. Hung Nguyen-Xuan, Center for Interdisciplinary Research Technology, Ho Chi Minh City University of Technology (HUTECH)
Support by the **Alexander von Humboldt Foundation** ist gratefully acknowledged.
- **Collaborative Research Center 1683** „Methods of interaction for the modular reuse of existing load-bearing structures”
Support by the **German Research Foundation (DFG)** ist gratefully acknowledged.



SFB 1683
Modular Reuse

DFG Deutsche
Forschungsgemeinschaft
German Research Foundation

| JOINT WORKSHOP ON TOPOLOGY OPTIMIZATION | | |
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| THURSDAY, JUNE 05, 2025 | | |
| 12:30 | Registration and Lunch Buffet, in front of Hall 3, Convention Center | |
| 13:30 | Session 1, Room: Hall 3, Convention Center, Chair: Kikis | |
| | Hackl, Hung | Welcome |
| | Hung | Nature-inspired TPMS structures: Optimal design, modeling, and fabrication |
| | Masarczyk | Special Aspects of Topology Optimization in Civil Engineering |
| | Kurzeja | Optimization of geo-inspired materials by utilization of the squirt-flow effect for low-frequency attenuation |
| | Pravda | Macroscopic Porosity Optimization using Thermodynamic Topology Optimization |
| 15:30 | Coffee Break, in front of Hall 3, Convention Center | |
| 16:00 | Session 2, Room: Hall 3, Convention Center, Chair: Hung | |
| | von Zabien-sky | On the effect of different density update schemes in thermodynamic topology optimization for hyperelastic material |
| | Kikis | Polygonal finite elements with Voronoi tessellations for topology optimization |
| | Weider | On the numerical calculation of topological derivatives for shells considering crash loadcases |
| 17:30 | Organizers | Closing Day 1 |
| 19:30 | Conference Dinner, Location: Hartmanns Wirtshaus | |
| FRIDAY, JUNE 06, 2025 | | |
| 9:00 | Session 3, Room: IC 03/610, Chair: | |
| | Li | Isogeometric Topology Optimization of Flexoelectric Metamaterials Based on Perturbation Analysis |
| | Wolf | Thermodynamic Topology Optimization of Electromagnetism |
| | Gangl | Multi-physical design optimization of electric machines |
| 10:30 | Coffee Break, Room IC 03-717 | |
| 11:00 | Session 4, Room: IC 03/610, Chair: Hackl | |
| | Fründt | Dehomogenization method for multi-scale topology optimization |
| | Krischok | Multi-scale phase-field optimization using TPMS micro-structures |
| | Tran | 3D NURBS-based reconstruction of TPMS lattice structures and their structural optimal design |
| 12:30 | Organizers | Closing Day 2 |
| 12:30 | Lunch Buffet, Room IC 03-717 | |