



FEniCS 2023 Conference
14-16 June 2023
Hotel Flamingo Resort, Pula (Cagliari), Italy

<https://fenicsproject.org/fenics-2023>

Conference schedule

Wednesday, 14 June 2023

08.55–09.15 *Conference opening.*

09.15–10.35 *New Techniques.*

09.15 - 09.35 Talk 1. Matthew Scroggs. newfl: working towards a new version of UFL.

09.35 - 09.55 Talk 2. Umberto Zerbinati. Netgen-DMPLex interface and FEniCS.

09.55 - 10.15 Talk 3. Jørgen S. Dokken. Checkpointing in DOLFINx.

10.15 - 10.35 Talk 4. Aaron Baier-Reinio. High-Order Finite Element Schemes for the Stokes-Onsager-Stefan-Maxwell Equations.

10.35–11.10 *Coffee break.*

11.10–12.50 *Electromagnetics and Waves.*

11.10 - 11.30 Talk 5. Pierric Mora. Elastodynamics with FEniCSx.

11.30 - 11.50 Talk 6. Jan Miklas. Poisson & Drift-Diffusion Equations Solver for Semiconductor Device Modelling.

11.50 - 12.10 Talk 7. Sima Zahedi Fard. Model order reduction of lattices by maximally localized Wannier functions.

12.10 - 12.30 Talk 8. Stefano Greco. Advanced electromagnetism with FEniCSx.

12.30 - 12.50 Talk 9. IIsbeth van Herck. SimCardEMS: A cardiac electromechanics solver to assess drug safety and efficacy.

13.00–14.00 *Lunch.*





14.15–14.55 *Multiphysics I.*

14.15 - 14.35 Talk 10. Pavan Inguva. Phase-field Modeling in FEniCS: Opportunities and Limitations.

14.35 - 14.55 Talk 11. Ottar Hellan. Deep Learning Mesh Motion Techniques with Application to Fluid-Structure Interaction and Shape Optimization.

14.55–15.30 *Biomechanics I.*

14.55 - 15.15 Talk 12. Thomas Couppey. Direct Model of Electrical Impedance Tomography for the Peripheral Nervous System.

15.15 - 15.35 Talk 13. Jørgen Riseth. Modeling and parameter estimation for tracer transport in the human brain.

15.35 - 15.55 Talk 14. Giulia Chiari. The influence of hypoxia on tumour growth, phenotypic heterogeneity and radiotherapy: mathematical modeling and simulations with FEniCS.

15.55 - 16.15 Talk 15. Halvor Herlyng. Modeling Cilia-Induced Flow of Cerebrospinal Fluid in Brain Ventricles with FEniCSx.

16.15–16.45 *Coffee break.*

16.45–..... *FEniCS on the beach.*

20.00–21.00 *Dinner.*

**Thursday, 15 June 2023**08.55–10.35 *FEM Mathematics I.*

08.55 - 09.15 Talk 16. Michal Bosy. FEM/BEM coupling using the Calderon projection and Nitsche's method.

09.15 - 09.35 Talk 17. Felipe Rocha. ddfenics: a FEniCS-based (Model-Free) Data-driven Computational Mechanics implementation.

09.35 - 09.55 Talk 18. Jakub Fara. Slip Conditions in Fluid-Structure Interaction.

09.55 - 10.15 Talk 19. Antonio Baiano Svizzero. Implementation of an automatic locally-conformal Perfectly Matched Layer in FEniCSx.

10.15 - 10.35 Talk 20. India Marsden. Redefining the finite element with Implementation in mind.

10.35–11.10 *Coffee break.*11.10–12.50 *Optimisation and Materials Engineering.*

11.10 - 11.30 Talk 21. Jeremy Bleyer. Advanced material modeling in FEniCSx.

11.30 - 11.50 Talk 22. Parisa Omidvar. A Design Process of Binary Stiffness Compliant Mechanism for Embodied Intelligence in Robotic Systems using FEniCS and gmsh.

11.50 - 12.10 Talk 23. Wolfgang Flachberger. Numerical treatment of diffusional phase transformations to predict damage in microelectronic solders

12.10 - 12.30 Talk 24. João Alves Ribeiro & Bruno A. Ribeiro. SimuStruct: An Integrated Approach of FEniCS and Machine Learning for Stress Prediction in Plates with Holes.

12.30 - 12.50 Talk 25. Anton Evdokimov. FEniCSx in Laser Hardening.

13.00–14.00 *Lunch.*14.15–15.30 *Flow and Diffusion*

14.15 - 14.35 Talk 26. Alena Jarolímová. Assimilation of 4D PC-MRI data into a blood flow model using dolfin-adjoint.

14.35 - 14.55 Talk 27. Chiara Giraud. Kinetic energy flow instability analysis applied to Poiseuille pipe flow.

14.55 - 15.15 Talk 28. Jesus Jairo Rodríguez Padilla. Implementation of a modified Mitchell-Schaeffer model to describe the electrical activity in the heart.

15.15 - 15.35 Talk 29. Laura Rinaldi. Bread baking simulation with FEniCS.

15.35–16.00 *Poster blitz.*16.00–16.30 *Coffee break.*16.30–..... *FEniCS on the beach.*20.00–21.00 *Dinner.*

**Friday, 16 June 2023****08.55–09.55 *Multiphysics II.***

08.55 - 09.15 Talk 30. James Dark. Multi-physics modelling of nuclear fusion device sub-components: The tritium breeding blanket.

09.15 - 09.35 Talk 31. Joseph P. Dean. Solving multiphysics problems in FEniCSx.

09.35 - 09.55 Talk 32. Marc Hirschvogel. Fluid-reduced-Solid Interaction (FrSI): Physics- and Projection-based Model Reduction for Cardiac Hemodynamics.

09.55–10.35 *FEM Mathematics II.*

09.55 - 10.15 Talk 33. Igor Baratta. Efficient Preconditioning for Elliptic Problems: Implementing p-Multigrid with Dolfinx.

10.15 - 10.35 Talk 34. Andres A. León Baldelli. On Evolution of Irreversible Systems: Computing Existence Analysis.

10.35–11.10 *Coffee break.***11.10–12.50 *Biomechanics II.***

11.10 - 11.30 Talk 35. Massimiliano Leoni. Modelling and numerical simulation of Venous-Extra-Corporeal Membrane Oxygenation

11.30 - 11.50 Talk 36. Francesca Ballatore. Modelling brain tumour growth and its impact on the surrounding tissue: a Continuum Mechanics approach with FEniCS-based simulations

11.50 - 12.10 Talk 37. Ingeborg Gjerde. Hitchhikers guide to coupled 1d-3d flow models in FEniCS.

12.10 - 12.30 Talk 38. Jana Brunátová. Blood flow modeling in brain aneurysms.

12.30 - 12.50 Talk 39. Daniel Acosta Soba. A structure-preserving upwind DG scheme for a degenerate phase-field tumor model.

13.00–14.00 *Lunch.***14.15–..... *Discussion, closing.***

Afterwards Farewell and/or FEniCS on the beach.

20.00–21.00 *Dinner.*