

**Workshop on “Discretization of Differential Complexes” of the Thematic  
Programme on****“Differential Complexes: Theory, Discretization, and Applications”****May 18 - 22, 2026****organized by****Andreas Cap (U of Vienna), Ralf Hiptmair (ETH Zurich), Kaibo Hu (U of Oxford),  
Joachim Schöberl (TU Wien)****• Monday, May 18th, 2026**09:00 – 09:20 **Welcome & Registration**09:20 – 09:30 **Opening**09:30 – 10:15 **Ari Stern (WUSTL, St. Louis)***HDG methods in finite element exterior calculus*10:15 – 10:45 **Coffee Break**10:45 – 11:30 **Astrid Pechstein (JKU, Linz)***The TDNNS method in ferroelectric material modeling*11:30 – 12:15 **Adam Sky (U of Luxembourg)***Structure-preserving discretisation of  $SO(3)$ -rotation fields for finite Cosserat elasticity*12:15 – 13:40 **Lunch Break**13:40 – 14:25 **Daniele Boffi (KAUST, Thuwal)***Approximation of spectra of advection-diffusion problems for differential forms*14:25 – 15:30 **Ragnar Winther (U Oslo)***The bubble transform, a tool for analyzing finite element methods of high polynomial degree*15:30 – 16:00 **Coffee Break**16:00 – 16:45 **Long Chen (UC Irvine)***Geometric Decompositions of Finite Element Spaces and Complexes***• Tuesday, May 19th, 2026**09:30 – 10:15 **Michael Dumbser (U of Trento)***A simple and general framework for the construction of exactly div-curl-grad compatible discontinuous Galerkin finite element schemes on unstructured simplex meshes*10:15 – 10:45 **Coffee Break**10:45 – 11:30 **Daniele Di Pietro (U de Montpellier)***The Discrete De Rham method*11:30 – 12:15 **Jerome Droniou (CNRS, IMAG)***Continuous vs. fully discrete analysis: principles, and application to Discrete De Rham scheme for Stokes equations*12:15 – 14:00 **Lunch Break**

14:00 – 14:45 **Jinchao Xu (KAUST, Thuwal)**

*On the approximation properties of neural networks*

14:45 – 15:30 **Deepesh Toshniwal (TU Delft)**

*Beyond de Rham: Adaptive FEEC and High-Order Complexes*

15:30 – 16:00 **Coffee Break**

• **Wednesday, May 20th, 2026**

09:30 – 10:15 **Francesca Bonizzoni (Politecnico Milano)**

*Discrete tensor product BGG sequences*

10:15 – 10:45 **Coffee Break**

10:45 – 11:30 **Guido Kanschat (U Heidelberg)**

*Construction of finite element differential complexes by tensor products*

11:30 – 12:15 **Tatyana Sorokina (Towson U)**

*Bernstein-B'ezier techniques for linear differential operators on splines*

12:15 – 14:00 **Lunch Break**

14:00 – 14:45 **Jun Hu (Peking U)**

*Conforming Finite Element Gradgrad and Divdiv complexes*

14:45 – 15:30 **Jay Gopalakrishnan (pdx)**

*2-Complexes of Sobolev Spaces with Second-Order Differential Operators in Three Dimensions*

15:30 – 16:00 **Coffee Break**

16:00 – 16:45 **Shuo Zhang (AMSS, Beijing)**

*Nonconforming finite element exterior calculus and primal schemes for the Hodge Laplace equation*

18:00 – 22:00 **Workshop Dinner**

• **Thursday, May 21st, 2026**

09:30 – 10:15 **Amir Vaxman (U of Edinburgh)**

*Conformal Maps and Directional Fields: Can two walk together, except they be agreed?*

10:15 – 10:45 **Coffee Break**

10:45 – 11:30 **Anil Hirani (U Illinois)**

*Discrete Vector Bundles with Connection and Čech Cohomology*

11:30 – 12:15 **Shuonan Wu (Peking U)**

*Exponentially-fitted finite element method for  $H(\text{curl})$  and  $H(\text{div})$  convection-diffusion problems*

12:15 – 14:00 **Lunch Break**

14:00 – 14:45 **Yakov Berchenko-Kogan (Florida Tech, Melbourne)**

*Two approaches to finite element tensor calculus on surfaces*

14:45 – 15:30 **Evan Gawlik (Santa Clara U)**

*Double forms and curvature approximation*

15:30 – 16:00 **Coffee Break**

16:00 – 16:45 **Ivan Izmestiev (TU Wien)**

*Discrete Laplace operators*

- **Friday, May 22nd, 2026**

09:30 – 10:15 **Theo Braune (École Polytechnique, Palaiseau)**

*Beyond DEC: A Structure preserving Discrete Exterior Calculus for Bundle Valued Forms*

10:15 – 10:45 **Coffee Break**

10:45 – 11:30 **Alexander Linke (RPTU Kaiserslautern-Landau)**

*The Significance of Pressure-Robustness - From Mixed Problems to the Compressible Navier–Stokes Equations*

11:30 – 12:15 **Shipeng Mao (Chinese Academy of Sciences, Beijing)**

*Structure-Preserving and Helicity-Conserving FEEC For Magnetohydrodynamic Systems*

12:15 – 14:00 **Lunch Break**

14:00 – 14:45 **Yuwen Li (Zhejiang U)**

*Polynomial-degree-robust a posteriori error estimates based on auxiliary spaces*

14:45 – 15:30 **Rui Ma (BIT, Beijing)**

*Optimality of adaptive  $H(\text{divdiv})$  mixed finite element methods for the Kirchhoff-Love plate bending problem*

15:30 – 16:00 **Coffee Break**

**All talks take place at ESI Boltzmann Lecture Hall!**