

Week 1 of the Thematic Programme on
“Differential Complexes: Theory, Discretization, and Applications”

April 20 - 24, 2026

organized by

Andreas Cap (U of Vienna), Ralf Hiptmair (ETH Zurich), Kaibo Hu (U of Oxford),
Joachim Schöberl (TU Wien)

• **Monday, April 20th, 2026**

09:00 – 12:00 **Registration and Welcome**

14:00 – 14:45 **Kickoff and Introduction of Participants**

14:45 – 15:30 **Patrick Farrell (U of Oxford)**

Enforcing conservation laws and dissipation inequalities numerically via auxiliary variables

15:30 – 16:00 **Coffee break**

• **Tuesday, April 21st, 2026**

10:00 – 12:00 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) I

Contents of the short course:

1. Perspectives on Differential Forms
 2. The L_2 de Rham Hilbert complex
 3. Chains and Cochains and Discrete Differential Forms
 4. (Stable) Commuting Projections
 5. Discrete Poincaré Inequalities
 6. FEEC Discretization of Hodge-Laplacians and Dirac Operators
 7. Discrete Compactness
- (Lectures and topics are aligned only crudely.)

12:00 – 13:45 **Lunch Break**

13:45 – 16:45 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) II,
including problem solving and discussion

• **Wednesday, April 22nd, 2026**

10:00 – 12:00 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) III

12:00 – 13:45 **Lunch Break**

13:45 – 16:45 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) IV,
including problem solving and discussion

- **Thursday, April 23rd, 2026**

10:00 – 12:00 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC), V

12:00 – 13:45 **Lunch Break**

13:45 – 16:45 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) VI,

including problem solving and discussion

- **Friday, April 24th, 2026**

10:00 – 12:00 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC), VII

12:00 – 13:45 **Lunch Break**

13:45 – 16:45 **Ralf Hiptmair (ETH Zürich)**

Finite Element Exterior Calculus (FEEC) VIII,

including problem solving and discussion

All talks take place at ESI Boltzmann Lecture Hall!