

## **CRC Workshop Time Integration of PDEs**

**October 5-9, 2025**

**Hirschegg, Austria**

### **Participants and talks**

1. Adalid Braun, Raphael  
Hagedorn wave packets – application to the magnetic Schrödinger equation
2. Burkhard, Selina  
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3. Cao, Jiachuan  
Numerical approximation of rough solutions for nonlinear wave equations with nontrivial boundary conditions
4. Dörich, Benjamin  
Time integration for (linearly) constrained wave equations
5. Eckhardt, Daniel  
Chebyshev approximations for matrix functions
6. Gatzke, Lea  
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7. Gremminger, Fabian  
Runge-Kutta-Chebyshev (RKC) methods
8. Grimm, Volker  
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9. Hauck, Moritz  
Numerical treatment of elliptic multiscale problems in non-divergence form
10. Hochbruck, Marlis  
Exponential integrators for charged particles in strong magnetic fields
11. Holten, Joseph  
Domain decomposition for elastic wave propagation in spatial networks
12. Hoffmann, Felix  
TiMaxDG – Discontinuous Galerkin time-domain simulations of Maxwell's equations in anisotropic media
13. Kirn, Michael  
An oscillation rewinding splitting method for nonlinear Dirac equations
14. Krumbiegel, Felix  
Higher-order numerical homogenization for the acoustic wave equation
15. Lück, Tino  
Long-time simulation of waves in heterogeneous media

16. Maier, Roland  
Decoupling discretization schemes for coupled elliptic-parabolic problems
17. Mühlhäuser, Dustin  
Towards a scale-bridging time discretization scheme for the wave equation
18. Neher, Markus  
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19. Quitter, Carl  
Time integration and accuracy analysis of variational Gaussian approximations for the Schrödinger equation
20. Ruff, Maximilian  
Improved error estimates for low-regularity integrators using space-time bounds
21. Scheifinger, Malik  
Higher-order local time-integration
22. Wolf, Julian  
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#### Schedule

	Morning	Afternoon	Evening
Sunday			
Monday	3 + 2	3 + 1	
Tuesday			
Wednesday	3 + 2		
Thursday	2 + 1		

## Program, version of October 7, 2025

Sunday, October 5		
13:00–17:30	Arrival	
18:10–18:30	Welcome address	
18:30–20:00	Dinner	

Monday, October 6		
07:30–09:00	Breakfast	
09:00–09:35	Dörich, Benjamin	Time integration for (linearly) constrained wave equations
09:35–10:10	Ruff, Maximilian	Improved error estimates for low-regularity integrators using space-time bounds
10:10–10:45	Cao, Jiachuan	Numerical approximation of rough solutions for nonlinear wave equations with nontrivial boundary conditions
10:45–11:15	Break	
11:15–11:50	Eckhardt, Daniel	Chebyshev approximations for matrix functions
11:50–12:25	Gremminger, Fabian	Runge-Kutta-Chebyshev (RKC) methods
12:30–13:30	Lunch	
16:15–16:50	Krumbiegel, Felix	Higher-order numerical homogenization for the acoustic wave equation
16:50–17:10	Lück, Tino	Long-time simulation of waves in heterogeneous media
17:10–17:30	Hoffmann, Felix	TiMaxDG – Discontinuous Galerkin time-domain simulations of Maxwell's equations in anisotropic media
17:30–17:50	Break	
17:50–18:25	Maier, Roland	Decoupling discretization schemes for coupled elliptic-parabolic problems
18:30–20:00	Dinner	

Tuesday, October 7		
07:30–09:00	Breakfast	
09:00–09:35	Adalid Braun, Raphael	Hagedorn wave packets – application to the magnetic Schrödinger equation
09:35–10:10	Quitter, Carl	Time integration and accuracy analysis of variational Gaussian approximations for the Schrödinger equation
10:10–10:45	Hochbruck, Marlis	Exponential integrators for charged particles in strong magnetic fields
10:45–11:15	Break	
11:15–11:50	Scheifinger, Malik	Higher-order local time-integration
11:50–12:25	Hauck, Moritz	Numerical treatment of elliptic multiscale problems in non-divergence form
12:30–13:30	Lunch	
13:30–18:30	Discussions, other activities	
18:30–20:00	Dinner	

Wednesday, October 8		
07:30–09:00	Breakfast	
09:15–18:00	Hike	
18:30–20:00	Dinner	

Thursday, October 9		
07:30–09:00	Breakfast, check out	
09:00–09:35	Kirn, Michael	An oscillation rewinding splitting method for nonlinear Dirac equations
09:35–10:10	Holten, Joseph	Domain decomposition for elastic wave propagation in spatial networks
10:10–10:45	Mühlhäuser, Dustin	Towards a scale-bridging time discretization scheme for the wave equation
10:45–11:00	Closing Session	
13:00	Departure	

#### Travel to Hirschegg (Meeting point in front of the math building)

- Bus 1 (booked from Saturday, 16:00, Engesser-Straße, Mercedes Vito)  
meeting 10:20, departure ca 10:30  
Felix H., Felix K., Joseph, Marlis, Markus, Maximilian (6 people)  
drivers: Marlis, Markus
- Bus 2 (booked from Saturday, 16:00, Fritz-Erler-Straße, Parkhaus, Ford Transit)  
meeting 10:20, departure ca 10:30  
Benjamin, Daniel (from Ulm), Fabian, Malik, Raphael, Selina (6 people)  
driver: Benjamin, Daniel
- Bus 3 (booked from Sunday, 10:00, Schwarzwaldstraße, Ford Transit)  
meeting 10:50, departure ca 11:00  
Carl, Jiachuan, Julian, Lea, Moritz, Tino, Volker (7 people)  
driver: Volker
- VW Passat (booked from Saturday, 16:00, Fritz-Erler-Straße, Parkhaus)  
meeting 10:50, departure ca 11:00  
Dustin, Roland (2 people)  
driver: Roland
- drivers: Marlis, Benjamin, Daniel, Markus, Michael, Roland, Volker
- self organized travel: Michael (bike)

#### Komoot links to hiking tours on Wednesday

- [Short hike](#), meeting 9:55am at the entrance hall
- [Longer Hike](#), meeting 8:55am at the entrance hall

## Rooms

Room type	Rooms	Beds
double comfort / bathroom	4	8
double classic / bathroom	4	8
twin / no bath	3	6
triple / no bath	6	12
quadruple / no bath	1	2

18 rooms, 22 participants.

14 single rooms: Marlis, Roland, Benjamin, Jiachuan, Markus, Michael K., Moritz, Volker, Carl, Daniel, Malik, Maximilian, Raphael, Lea

4 double rooms: Felix K./Selina, Dustin/Joseph, Felix H./Tino, Fabian/Julian