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**Conference on Mathematics of  
Wave Phenomena  
July 23-27, 2018**

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hosted by:

**Collaborative Research Center 1173  
Karlsruhe Institute of Technology  
Germany**

**Conference Program**

**Wave phenomena**  
analysis and numerics



**Monday, July 23, 9:00 – 9:15**

**Welcome Session**

Tulla Lecture Hall (11.40)

**Monday, July 23, 9:15 – 10:15**

**Plenary Talk: Daniel Tataru**

*Two dimensional water waves and related models*

Tulla Lecture Hall (11.40)

**Monday, July 23, 10:15 – 11:15**

**Plenary Talk: Erwan Faou**

*Linearized wave turbulence for three-wave systems*

Tulla Lecture Hall (11.40)

**Monday, July 23, 11:15 – 11:45**

**Coffee Break** (Atrium in 20.30)

**Monday, July 23, 11:45 – 13:15**

**Minisymposium 6: Inverse scattering and electrical impedance tomography**

**Room 0.014 (20.30)**

- 11:45 – 12:10 *The Generalized Linear Sampling Method for a Far-Field Inverse Scattering Problem in the Time Domain*  
Fioralba Cakoni
- 12:15 – 12:40 *Multifrequency MUSIC and a multifrequency factorization method for inverse scattering problems*  
Christian Schmiedecke
- 12:45 – 13:10 *Inverse Problems for Perturbed Bi-harmonic Operator*  
Valery Serov

**Minisymposium 7: Time integration for wave-type problems**

**Room 1.067 (20.30)**

- 11:45 – 12:10 *Numerical analysis of a structure preserving scheme for Maxwell Klein-Gordon equations in 2D*  
Claire Scheid
- 12:15 – 12:40 *Stable and convergent fully discrete interior–exterior coupling for Maxwell’s equations and related problems*  
Balazs Kovacs
- 12:45 – 13:10 *Error analysis of an ADI splitting for discontinuous Galerkin discretizations of linear wave-type problems*  
Jonas Kohler

## **Minisymposium 9: Kerr frequency combs – from models to experiments and back**

### **Room 2.066 (20.30)**

- 11:45 – 12:10 *Polarization modulational instability in microresonators*  
Tobias Hansson
- 12:15 – 12:40 *Cracking patterns in optical microresonators*  
Damia Gomila
- 12:45 – 13:25 *Microresonator soliton frequency combs*  
Tobias Kippenberg

## **Minisymposium 13: Nonlinear dispersive equations – blowup, solitons and long-time behavior**

### **Room -1.025 (20.30)**

- 11:45 – 12:10 *On stability of blow up solutions for the critical co-rotational Wave Maps problem*  
Shuang Miao
- 12:15 – 12:40 *Existence and stability of blowup for wave maps into negatively curved targets*  
Irfan Glogic
- 12:45 – 13:10 *Dynamics of strongly interacting unstable two-solitons for generalized Korteweg-de Vries equations*  
Jacek Jendrej

## **Contributed Talks**

### **Room 2.067 (20.30)**

- 11:45 – 12:10 *Fractional derivatives in models of wave propagation in viscoelastic media*  
Sanja Konjik
- 12:15 – 12:40 *Long-Time Existence of Solutions to Nonlocal Nonlinear Wave Equations with Nonsmooth Kernels*  
Saadet Erbay
- 12:45 – 13:10 *Critical points in Strichartz functional*  
Vadim Zharnitsky

## **Monday, July 23, 13:15 – 15:00**

### **Lunch Break**

## **Monday, July 23, 15:00 – 16:00**

## **Minisymposium 6: Inverse scattering and electrical impedance tomography**

### **Room 0.014 (20.30)**

- 15:00 – 15:25 *Eigenvalue Problems in Inverse Scattering Theory*  
David Colton
- 15:30 – 15:55 *The Monotonicity Method for the Helmholtz equation*  
Bastian Harrach

## **Minisymposium 7: Time integration for wave-type problems**

### **Room 1.067 (20.30)**

- 15:00 – 15:25 *Convergence analysis of conservative local time discretization for wave equations*  
Sebastien Imperiale
- 15:30 – 15:55 *On leap-frog-Chebyshev methods*  
Andreas Sturm

## **Minisymposium 9: Kerr frequency combs – from models to experiments and back**

### **Room 2.066 (20.30)**

- 15:00 – 15:25 *Periodic waves of the Lugiato-Lefever equation at the onset of Turing instability*  
Lucie Delcey
- 15:30 – 16:10 *Instabilities of periodic waves for the Lugiato-Lefever equation*  
Mariana Haragus

## **Minisymposium 13: Nonlinear dispersive equations – blowup, solitons and long-time behavior**

### **Room -1.025 (20.30)**

- 15:00 – 15:25 *Singularity formation for Burgers equation with transversal viscosity and related problems*  
Charles Collot
- 15:30 – 15:55 *Stable Self-Similar Blowup for a family of nonlocal transport equations*  
Tej-eddine Ghoul

## **Contributed Talks**

### **Room 2.067 (20.30)**

- 15:00 – 15:25 *Radiation conditions for periodic potentials*  
Nguyen Thai Ngoc
- 15:30 – 15:55 *The Faraday cage effect in a tri-dimensionnal plane periodic structure*  
Berangere Delourme

## **Monday, July 23, 16:00 – 16:30**

**Coffee Break** (Atrium in 20.30)

## **Monday, July 23, 16:30 – 18:30**

## **Minisymposium 6: Inverse scattering and electrical impedance tomography**

### **Room 0.014 (20.30)**

- 16:30 – 16:55 *The imaginary part of the scattering Green function: monochromatic relations to the real part and uniqueness*  
Alexey D. Agaltsov
- 17:00 – 17:25 *Logarithmic linearization in electrical impedance tomography*  
Nuutti Hyvonen
- 17:30 – 17:55 *A Single Boundary Integral Equation for Transmission Eigenvalues*  
Rainer Kress

## Minisymposium 7: Time integration for wave-type problems

### Room 1.067 (20.30)

- 16:30 – 16:55 *Numerical methods and analysis for the Zakharov system in the subsonic limit regime*  
Chunmei Su
- 17:00 – 17:25 *Stability and convergence of time discretizations of quasi-linear evolution equations of Kato type*  
Christian Lubich
- 17:30 – 17:55 *On the convergence of Lawson methods for semilinear stiff problems*  
Marlis Hochbruck

## Minisymposium 9: Kerr frequency combs – from models to experiments and back

### Room 2.066 (20.30)

- 16:30 – 16:55 *Bifurcation structure of localized states in the Lugiato-Lefever equation with anomalous dispersion*  
Pedro Parra-Rivas
- 17:00 – 17:25 *Global bifurcation results for the Lugiato-Lefever equation*  
Rainer Mandel
- 17:30 – 17:55 *Ultrafast optical ranging using microresonator soliton frequency combs*  
Philipp Trocha
- 18:00 – 18:25 *Dark and bright solitons in models for frequency combs*  
Janina Gärtner

## Minisymposium 13: Nonlinear dispersive equations – blowup, solitons and long-time behavior

### Room -1.025 (20.30)

- 16:30 – 16:55 *Global attraction to solitary waves for Klein-Gordon equation with concentrated nonlinearities*  
Elena Kopylova
- 17:00 – 17:25 *Type II blow up solutions with optimal stability properties for the critical focussing nonlinear wave equation on  $\mathbb{R}^{3+1}$*   
Stefano Burzio
- 17:30 – 17:55 *Breather solutions for nonlinear Klein-Gordon equations on periodic metric graphs*  
Daniela Maier
- 18:00 – 18:25 *A priori estimates and existence of periodic solutions to the modified Benjamin-Ono equation below  $H^{1/2}(\mathbb{T})$*   
Robert Schippa

## Contributed Talks

### Room 2.067 (20.30)

- 16:30 – 16:55 *Spectral estimates for Dirichlet Laplacian on twisted tubes*  
Diana Barseghyan
- 17:00 – 17:25 *A Global div-curl-Lemma for Mixed Boundary Conditions in Weak Lipschitz Domains and a Corresponding Generalized  $A_0^*$ - $A_1$ -Lemma in Hilbert Spaces*  
Dirk Pauly
- 17:30 – 17:55 *Geometrical approximations of Schrödinger operators with point interactions"*  
Andrii Khrabustovskyi

**Tuesday, July 24, 9:00 – 10:00**

**Plenary Talk: Pierre Raphael**

*Energy concentration and singularity formation in nonlinear wave dynamics*

Tulla Lecture Hall (11.40)

**Tuesday, July 24, 10:00 – 11:00**

**Plenary Talk: Igor Tsukermann**

*Treffitz Approximations for Complex Structures*

Tulla Lecture Hall (11.40)

**Tuesday, July 24, 11:00 – 11:30**

**Coffee Break** (Atrium in 20.30)

**Tuesday, July 24, 11:30 – 13:00**

**Minisymposium 1: Stochastic nonlinear wave and Schrödinger equations and applications**

**Room 2.067 (20.30)**

11:30 – 11:55 *Branching processes representation of solutions to non-linear Dirac equations*  
Tomasz Zastawniak

12:00 – 12:25 *On the stochastic Gross-Pitaevskii equation*  
Reika Fukuizumi

12:30 – 12:55 *On existence, uniqueness, regularity and invariant measures for stochastic wave equations*  
Martin Ondřejat

**Minisymposium 10: Microlocal analysis of wave phenomena**

**Room 2.066 (20.30)**

11:30 – 11:55 *Extrapolation of solutions of wave equations in the frequency domain: a microlocal viewpoint*  
Laurent Demanet

12:00 – 12:25 *Microlocal analysis and numerical schemes for time harmonic waves*  
Christiaan C. Stolk

12:30 – 12:55 *Bilinear operators and Fréchet differentiability in seismic imaging*  
Allan Greenleaf

**Minisymposium 12: Pattern formation and localized structures**

**Room 1.067 (20.30)**

11:30 – 11:55 *One-dimensional periodic solutions in a three-component reaction-diffusion system*  
Gianne Derks

12:00 – 12:25 *Striped pattern selection by advective reaction-diffusion systems*  
Eric Siero

12:30 – 12:55 *Grain boundaries for the Bénard-Rayleigh problem*  
Mariana Haragus

## Minisymposium 14: Stability of solitary waves

### Room -1.025 (20.30)

- 11:30 – 11:55 *On linear stability of bi-frequency solitary waves of the nonlinear Dirac equation*  
Andrew Comech
- 12:00 – 12:25 *On stability of solitary waves of the nonlinear Dirac equation in the non-relativistic limit*  
Nabile Boussard
- 12:30 – 12:55 *Ill-Posedness of the Third Order NLS Equation with Raman Scattering Term*  
Yoshio Tsutsumi

## Contributed Talks

### Room 0.014 (20.30)

- 11:30 – 11:55 *Mind the gap – a splitting approach to highly oscillatory differential equations*  
Simone Buchholz
- 12:00 – 12:25 *Splitting Methods for Plasmonic Nanostructures*  
Constantin Carle
- 12:30 – 12:55 *A splitting approach for the magnetic Schrödinger equation"*  
Chiara Piazzola

## Tuesday, July 24, 13:00 – 15:00

### Lunch Break

## Tuesday, July 24, 15:00 – 16:00

## Minisymposium 1: Stochastic nonlinear wave and Schrödinger equations and applications

### Room 2.067 (20.30)

- 15:00 – 15:25 *Singular Stochastic PDEs for the Anderson Hamiltonian*  
Baris Evren Ugurcan
- 15:30 – 15:55 *Stochastic Strichartz estimates and the NLS with multiplicative noise*  
Fabian Hornung

## Minisymposium 10: Microlocal analysis of wave phenomena

### Room 2.066 (20.30)

- 15:00 – 15:25 *Miclocal analysis of Doppler SAR*  
Raluca Felea
- 15:30 – 15:55 *Microlocal analysis of a spindle transform arising in Compton scattering tomography*  
Sean Holman

## Minisymposium 5: Mathematical theory of water waves

### Room 1.067 (20.30)

- 15:00 – 15:25 *Amplitude equations for spatially periodic water wave models*  
Guido Schneider
- 15:30 – 15:55 *Regularity of the highest wave for the reduced Ostrovsky equation*  
Gabriele Brull

## Minisymposium 14: Stability of solitary waves

### Room -1.025 (20.30)

- 15:00 – 15:25 *Nonlinear profile decompositions and scattering for a NLS-ODE model*  
Scipio Cuccagna
- 15:30 – 15:55 *Initial-Boundary Value Problems for the Reaction-Diffusion Equation*  
Dionyssios Mantzavinos

## Contributed Talks

### Room 0.014 (20.30)

- 15:00 – 15:25 *A unified error analysis for non-conforming space discretizations of wave-type equations*  
David Hipp
- 15:30 – 15:55 *Linearly implicit time integration of semilinear wave equations with dynamic boundary conditions*  
Jan Leibold

## Tuesday, July 24, 16:00 – 16:30

Coffee Break (Atrium in 20.30)

## Tuesday, July 24, 16:30 – 18:30

## Minisymposium 1: Stochastic nonlinear wave and Schrödinger equations and applications

### Room 2.067 (20.30)

- 16:30 – 16:55 *Ergodicity of the Gibbs measure for the one dimensional stochastic cubic wave equation with damping*  
Leonardo Tolomeo
- 17:00 – 17:25 *Random-field Solutions of Weakly Hyperbolic Stochastic PDEs with Polynomially Bounded Coefficients*  
Alessia Ascanelli
- 17:30 – 17:55 *Mild Solutions of Weakly Hyperbolic Semilinear SPDEs with Polynomially Bounded Coefficients*  
Sandro Coriasco

## Minisymposium 10: Microlocal analysis of wave phenomena

### Room 2.066 (20.30)

- 16:30 – 16:55 *Local and global boundary rigidity*  
Plamen Stefanov
- 17:00 – 17:25 *Microlocal methods for geodesic X-ray transforms*  
Francois Monard
- 17:30 – 17:55 *Microlocal inversion of certain restricted ray transforms of symmetric tensor fields*  
Venky Krishnan



## Minisymposium 12: Pattern formation and localized structures

### Room 1.067 (20.30)

- 16:30 – 16:55 *Pattern formation in the wake of growth mechanisms*  
Ryan Goh
- 17:00 – 17:25 *Beyond all order asymptotics for homoclinic snaking in a Schnakenberg system*  
Hannes de Witt
- 17:30 – 17:55 *Modulated traveling fronts for the Swift-Hohenberg equation in case of an additional conservation law*  
Bastian Hilder

### Contributed Talks

#### Room -1.025 (20.30)

- 16:30 – 16:55 *Coupling Problems of Wave-type Equations*  
Sarah Eberle
- 17:00 – 17:25 *Transparent boundary conditions for the KdV equation*  
Mirko Residori
- 17:30 – 17:55 *Numerical simulation of rf-SQUIDs*  
Bernhard Maier

### Contributed Talks

#### Room 0.014 (20.30)

- 16:30 – 16:55 *The damped wave equation with unbounded damping*  
Petr Siegl
- 17:00 – 17:25 *On the Energy Rate of Decay for the linear Damped Klein Gordon Equation on Unbounded Domain*  
Satbir Malhi
- 17:30 – 17:55 *On the Stability of Traveling Wave Solutions to the Fornberg-Whitham Equation*  
Handan Borluk

**Wednesday, July 25, 9:00 – 10:00**

**Plenary Talk: Anne-Sophie Bonnet-BenDhia**

*A new complex frequency spectrum for the analysis of transmission properties in perturbed waveguides*

Tulla Lecture Hall (11.40)

**Wednesday, July 25, 10:00 – 11:00**

**Plenary Talk: Roland Donninger**

*Self-similar blowup in supercritical wave equations*

Tulla Lecture Hall (11.40)

**Wednesday, July 25, 11:00 – 11:30**

**Coffee Break** (Atrium in 20.30)

**Wednesday, July 25, 11:30 – 13:00**

**Minisymposium 2: Recent advances in inverse scattering theory**

**Room 0.014 (20.30)**

- 11:30 – 11:55 *Linear Sampling Method applied to Non Destructive Testing of an elastic waveguide: experimental validation*  
Laurent Bourgeois
- 12:00 – 12:25 *Non reflection and perfect reflection via Fano resonance in waveguides*  
Lucas Chesnel
- 12:30 – 12:55 *Qualitative methods in terminating waveguide imaging*  
Shixu Meng

**Minisymposium 5: Mathematical theory of water waves**

**Room -1.025 (20.30)**

- 11:30 – 11:55 *Modified Energy Functionals, Normal Forms and the NLS Approximation*  
C. Eugene Wayne
- 12:00 – 12:25 *Validity of the Nonlinear Schrödinger approximation for quasilinear dispersive equations"*  
Max Heß
- 12:30 – 12:55 *Spatial asymptotics for solitary waves in deep water*  
Miles Wheeler

## Minisymposium 8: Geometric methods in spectral theory of traveling waves

### Room 2.067 (20.30)

- 11:30 – 11:55 *The Maslov index in symplectic Banach spaces*  
Bernhelm Booß-Bavnbek
- 12:00 – 12:25 *Iteration theory of Maslov-type index*  
Chaofeng Zhu
- 12:30 – 12:55 *On the Fredholm Lagrangian Grassmannian, Spectral Flow and ODEs in Hilbert Spaces*  
Nils Waterstraat

## Minisymposium 14: Stability of solitary waves

### Room 1.067 (20.30)

- 11:30 – 11:55 *Inverse scattering transform for the integrable nonlocal nonlinear Schrödinger equation"*  
Ziad H. Musslimani
- 12:00 – 12:25 *Stability of solitary waves in PT -symmetric systems*  
Dmitry E. Pelinovsky
- 12:30 – 12:55 *Discrete breathers in PT-Symmetric metamaterials*  
M. Agaoglou

## Contributed Talks

### Room 2.066 (20.30)

- 11:30 – 11:55 *Analysis of the hp-version of a first order system least squares method for the Helmholtz equation.*  
Maximilian Bernkopf
- 12:00 – 12:25 *Parallel HPC Solution of the Helmholtz Equation with Controllability Methods*  
J. H. Tang
- 12:30 – 12:55 *Efficient stochastic sparse photoacoustic solver using ray tracing*  
Francesc Rullán

## Contributed Talks

### Room 3.069 (20.30)

- 11:30 – 11:55 *Dispersion relations of periodic photonic systems with a strong material dispersion*  
Christian Wolff
- 12:00 – 12:25 *Modelling and design of nano-structures: multilayer nanoplasmonics configurations*  
Harun Kurkcu
- 12:30 – 12:55 *Characterization of metamaterials beyond a local response*  
Carsten Rockstuhl

**Wednesday, July 25, 13:00 – 15:00**

**Lunch Break**

## Wednesday, July 25, 15:00 – 16:00

### Minisymposium 11: Bifurcations of nonlinear waves – theory, numerics and applications

#### Room 0.014 (20.30)

- 15:00 – 15:25 *Computation and stability of waves in Hamiltonian PDEs*  
Wolf-Jurgen Beyn
- 15:30 – 15:55 *Traveling waves in highly nonlinear shallow water equations*  
Anna Geyer

### Minisymposium 5: Mathematical theory of water waves

#### Room -1.025 (20.30)

- 15:00 – 15:25 *Degenerate dispersive equations*  
Benjamin Harrop-Griffiths
- 15:30 – 15:55 *A Morawetz inequality for water waves*  
Mihaela Ifrim

### Minisymposium 10: Microlocal analysis of wave phenomena

#### Room 2.067 (20.30)

- 15:00 – 15:25 *An explicit method of reconstruction for X-ray phase contrast imaging*  
Victor Palamodov
- 15:30 – 15:55 *Wavelet-based reconstructions in limited data photoacoustic tomography*  
Jurgen Frikel

### Minisymposium 14: Stability of solitary waves

#### Room 1.067 (20.30)

- 15:00 – 15:25 *On orbital stability of ground states for finite crystals in fermionic Schrödinger–Poisson model"*  
Alexander Komech
- 15:30 – 15:55 *Strong instability of standing waves for nonlinear Schrödinger equations with potential"*  
Masahito Ohta

### Contributed Talks

#### Room 2.066 (20.30)

- 15:00 – 15:25 *Uniformly accurate methods for Klein-Gordon-type equations*  
Simon Baumstark
- 15:30 – 15:55 *Efficient Numerical Schemes for Highly Oscillatory Klein–Gordon and Dirac type Equations*  
Patrick Kramer

## Wednesday, July 25, 16:00 – 16:30

**Coffee Break** (Atrium in 20.30)

## Wednesday, July 25, 16:30 – 18:30

### Minisymposium 2: Recent advances in inverse scattering theory

#### Room 0.014 (20.30)

- 16:30 – 16:55 *Asymptotic expansions for transmission eigenvalues for media with small inhomogeneities*  
Shari Moskow
- 17:00 – 17:25 *Monotonicity in inverse medium scattering on unbounded domains*  
Roland Griesmaier
- 17:30 – 17:55 *Analysis of sampling methods for locally perturbed periodic media using a single Floquet Bloch mode*  
Thi Phong Nguyen

### Minisymposium 5: Mathematical theory of water waves

#### Room -1.025 (20.30)

- 16:30 – 16:55 *Multi-modal and non-symmetric steady water waves with vorticity*  
Evgeniy Lokharu
- 17:00 – 17:25 *Wave collapses and turbulence at the free surface of a liquid dielectric in an external tangential electric field*  
Evgeny A. Kochurin
- 17:30 – 17:55 *Propagation of long-crested water waves*  
Colette Guillope

### Minisymposium 10: Microlocal analysis of wave phenomena

#### Room 2.067 (20.30)

- 16:30 – 16:55 *Analysis of reconstruction methods for photoacoustic tomography in heterogenous media*  
Markus Haltmeier
- 17:00 – 17:25 *Microlocal analysis of dynamic imaging problems*  
Bernadette Hahn

### Minisymposium 14: Stability of solitary waves

#### Room 1.067 (20.30)

- 16:30 – 16:55 *Stability of periodic waves in the generalized reduced Ostrovsky equation*  
Anna Geyer
- 17:00 – 17:25 *Existence and orbital stability of traveling waves for nonlocal double dispersive equations*  
Albert Erkip

### Contributed Talks

#### Room 2.066 (20.30)

- 16:30 – 16:55 *Post-processed Galerkin approximation of improved order for wave equations*  
Markus Bause
- 17:00 – 17:25 *Reciprocal Mass Matrices for Transient Elastodynamics*  
Anton Tkachuk
- 17:30 – 17:55 *Iterative regularization on a shape-manifold and applications to inverse obstacle scattering*  
Julian Eckhardt

**Thursday, July 26, 9:00 – 10:00**

**Plenary Talk: Liliana Borcea**

*Nonlinear processing of active array data in inverse scattering via reduced order models*

Tulla Lecture Hall (11.40)

**Thursday, July 26, 10:00 – 11:00**

**Plenary Talk: Ben Schweizer**

*Effective description of waves in discrete and heterogeneous media*

Tulla Lecture Hall (11.40)

**Thursday, July 26, 11:00 – 11:30**

**Coffee Break** (Atrium in 20.30)

**Thursday, July 26, 11:30 – 13:00**

**Minisymposium 2: Recent advances in inverse scattering theory**

**Room -1.025 (20.30)**

**11:30 – 11:55** *Imaging through random media by speckle intensity correlations*  
Josselin Garnier

**12:00 – 12:25** *A general framework for dynamic homogenization of wave motion at finite wavelengths and frequencies*  
Bojan B. Guzina

**12:30 – 12:55** *Reconstruction of local perturbations in periodic surfaces*  
Ruming Zhang

**Minisymposium 3: Spectral and dispersive properties of quantum Hamiltonians**

**Room 0.014 (20.30)**

**11:30 – 11:55** *On wave maps and related problems*  
Sebastian Herr

**12:00 – 12:25** *Invariant measures for the periodic derivative nonlinear Schrödinger equation"*  
Renato Luca

**12:30 – 12:55** *Unique Continuation for the Z-K dispersive equation*  
Lucrezia Cossetti

## **Minisymposium 8: Geometric methods in spectral theory of traveling waves**

### **Room 2.066 (20.30)**

- 11:30 – 11:55 *The Maslov Index and the Spectra of Second Order Elliptic Operators*  
Selim Sukhtaiev
- 12:00 – 12:25 *A generalized Maslov index for non-Hamiltonian systems*  
Graham Cox
- 12:30 – 12:55 *A Morse-Maslov theorem for the nonlinear Schrödinger equation on graphs"*  
Robby Marangell

## **Minisymposium 11: Bifurcations of nonlinear waves – theory, numerics and applications**

### **Room 1.067 (20.30)**

- 11:30 – 11:55 *Rotating waves driven by heating in spherical shells*  
Juan Sanchez Umbria
- 12:00 – 12:25 *The Role of Self-Organized Spatial Patterns in the Design of Agroforestry Systems*  
Omer Tzuk
- 12:30 – 12:55 *Patterns and Waves in Nonlocal Reaction-Diffusion Equations*  
Christian Kuehn

## **Contributed Talks**

### **Room 2.067 (20.30)**

- 11:30 – 11:55 *Operator Preconditioning for the Electric Field Integral Equation on Screens*  
Carolina Urzua-Torres
- 12:00 – 12:25 *Scattering of an Electromagnetic Wave by a Perfectly Conducting Obstacle Coated with Thin Layers*  
Fatima Z. Goffi
- 12:30 – 12:55 *Asymptotic modelling of the wave propagation in presence of an array of Helmholtz resonators*  
Adrien Semin

**Thursday, July 26, 13:00 – 15:00**

**Lunch Break**

**Thursday, July 26, 15:00 – 16:00**

## **Minisymposium 2: Recent advances in inverse scattering theory**

### **Room -1.025 (20.30)**

- 15:00 – 15:25 *Sub-wavelength sensing of bi-periodic materials using topological derivatives of the second-order homogenized moduli*  
Marc Bonnet
- 15:30 – 15:55 *Inverse Problems in Linear Elasticity via Eshelby's Integrodifferential Equation*  
D. Gintides

### **Minisymposium 3: Spectral and dispersive properties of quantum Hamiltonians**

#### **Room 0.014 (20.30)**

- 15:00 – 15:25 *Global existence and scattering via bilinear restriction estimates*  
Timothy Candy
- 15:30 – 15:55 *Non-selfadjoint spectral problems arising in the stability analysis of self-similar blowup in nonlinear wave equations*  
Irfan Glogic

### **Minisymposium 8: Geometric methods in spectral theory of traveling waves**

#### **Room 2.066 (20.30)**

- 15:00 – 15:25 *Index and instability of closed semi-Riemannian geodesics*  
Alessandro Portaluri
- 15:30 – 15:55 *Fluidic Shock Waves without or with Electromagnetic Fields*  
Heinrich Freistuhler

### **Minisymposium 11: Bifurcations of nonlinear waves – theory, numerics and applications**

#### **Room 1.067 (20.30)**

- 15:00 – 15:25 *A network of invariant solutions in inclined layer convection*  
Tobias M. Schneider
- 15:30 – 15:55 *Front propagation in bistable pattern-forming systems*  
Edgar Knobloch

### **Contributed Talks**

#### **Room 2.067 (20.30)**

- 15:00 – 15:25 *Modeling energy balance in a Boussinesq-type equations for undular bores*  
L. K. Budiasih
- 15:30 – 15:55 *Numerical experiments of generation and propagation of internal waves using a two-layer non-hydrostatic model*  
S.R. Pudjaprasetya

### **Minisymposium 4: Optimization of transmission and reflection of waves**

#### **Room 3.069 (20.30)**

- 15:00 – 15:25 *Shape optimization of microlenses*  
Alberto Paganini
- 15:30 – 15:55 *Isogeometric shape optimization for nonlinear ultrasound focusing*  
Vanja Nikolic

**Thursday, July 26, 16:00 – 16:30**

**Coffee Break** (Atrium in 20.30)



## Thursday, July 26, 16:30 – 18:30

### Contributed Talks

#### Room -1.025 (20.30)

- 16:30 – 16:55 *Dynamic Inverse Problems for Wave Equations*  
Thies Gerken
- 17:00 – 17:25 *Application of the Floquet-Transform to the Helmholtz Equation and Maxwell Equations on Locally Perturbed*  
Alexander Konschin
- 17:30 – 17:55 *Data recovery: from limited-aperture to full-aperture*  
Xiaodong Liu

### Minisymposium 8: Geometric methods in spectral theory of traveling waves

#### Room 2.066 (20.30)

- 16:30 – 16:55 *Fredholm Grassmannian flows and nonlinear PDEs*  
Simon J.A. Malham
- 17:00 – 17:25 *The Maslov and Morse indices for Hamiltonian systems*  
Alim Sukhtayev
- 17:30 – 17:55 *On coalescing characteristics in Whitham modulation theory: the (Krein) sign characteristic and its nonlinear implications*  
Thomas J. Bridges

### Minisymposium 11: Bifurcations of nonlinear waves – theory, numerics and applications

#### Room 1.067 (20.30)

- 16:30 – 16:55 *Wave-pinning, Turing instability and localised pattern formation*  
Alan Champneys
- 17:00 – 17:25 *Spatial solitons in PT-symmetric systems: bifurcation from eigenvalues and from spectral intervals*  
Tomas Dohnal
- 17:30 – 17:55 *Modulation equations at the Eckhaus boundary – The KdV equation –*  
Tobias Haas
- 18:00 – 18:25 *Localized structures in an extended Klausmeier model*  
Martina Chirilus-Bruckner

### Contributed Talks

#### Room 2.067 (20.30)

- 16:30 – 16:55 *Exact complex scalings based on Hardy space infinite elements*  
M. Wess
- 17:00 – 17:25 *Multiharmonic analysis for nonlinear acoustics with small excitation amplitude*  
Kersten Schmidt
- 17:30 – 17:55 *Recovering sound speed and density from the cross covariance function in helioseismology*  
Damien Fournier

### Minisymposium 4: Optimization of transmission and reflection of waves

#### Room 3.069 (20.30)

- 16:30 – 16:55 *Pareto optimization of resonances*  
Illya M. Karabash
- 17:00 – 17:25 *Fast estimation of losses of free-form waveguides using a fundamental mode approximation*  
Fernando Negrodo

**Friday, July 27, 9:00 – 10:00**

**Plenary Talk: Björn Sandstede**

*Nonlinear stability of sources*

Tulla Lecture Hall (11.40)

**Friday, July 27, 10:00 – 11:00**

**Plenary Talk: Peter Monk**

*Optimal design of thin film solar cells*

Tulla Lecture Hall (11.40)

**Friday, July 27, 11:00 – 11:30**

**Coffee Break** (Atrium in 20.30)

**Friday, July 27, 11:30 – 12:30**

**Plenary Talk: Björn Engquist**

*Fast solvers for frequency domain wave propagation*

Tulla Lecture Hall (11.40)