

PROGRAM

Sunday, April 13, 2025

5:00–7:00 REGISTRATION AND RECEPTION, Athena Ballroom A

Monday, April 14, 2025

7:30–10:00 REGISTRATION, Athena Ballroom A

8:10–8:30 WELCOME

Thiab Taha, Program Chair and Conference Coordinator

8:30–9:30 KEYNOTE LECTURE I, Athena Ballroom E

Mark Hoefer: *Recent developments in dispersive hydrodynamics*

Chair: Thiab Taha

9:30– 9:55 COFFEE BREAK

10:00–10:50 SESSION 20, Athena Ballroom E: *Investigation of nonlinear dispersive wave systems - I/III*

Chairs: Min Chen, Olivier Goubet and Bingyu Zhang

10:00–10:25 Jerry Bona: *A model for bore propagation with dynamic boundary conditions*

10:25–10:50 Shenghao Li, Xin Yang and Bingyu Zhang:

Conditional and unconditional local well-posedness problem for some dispersive systems on the half line

10:00–10:50 SESSION 9, Ballroom A: *Recent trends in acoustics and related wave phenomena: computational and analytical methodologies*, Chair: James Lambers

10:00–10:25 James Lambers: *Krylov Subspace Spectral Methods for Problems in Acoustics*

10:25–10:50 Chandler Shimp and James Lambers: *Numerical simulation of finite amplitude acoustic waves featuring gradient catastrophe*

10:00–10:50 SESSION 21, Ballroom C: *Advances in integrable systems and inverse scattering - I/IV*

Chairs: Barbara Prinari and Gino Biondini

10:00–10:25 Kaitlynn Lilly and Tom Trogdon:

A numerical Riemann-Hilbert approach to the computation of transform pairs

10:25–10:50 Francesco Demontis: *Three-way focusing Zakharov-Shabat systems with zero diagonal entry*

10:00–10:50 SESSION 27, Ballroom D: *Theoretical and numerical advances in fluids and nonlinear optics - I/II*

Chairs: Denis Silantyev, Sergey Dyachenko and Alexandr Chernyavsky

10:00–10:25 Justin Cole: *Topological insulators in magneto-optical systems*

10:25–10:50 Rafail Abramov: *Turbulence via intermolecular potential*

10:00–10:50 PAPERS, Ballroom B: *Nonlinear partial differential equations and dynamical behavior of solutions*, Chair: Runzhang Xu

10:00–10:25 S. Sangeetha, K. Mathiyalagan, Sangmoon Lee and Ju H. Park: *Stabilization and SMC design for coupled ODE-transport PDE Systems*

10:25–10:50 Shashwat Sharan, Patrick Sprenger, Boaz Ilan and Mark Hoefer: *Vacuum dam-break problem for the nonlinear Schrodinger equation in a harmonic potential*

10:55–12:10 SESSION 2, Athena Ballroom E: *Evolution equations and integrable systems - I/II*

Chairs: Alex Himonas, Curtis Holliman and Fangchi Yan

10:55–11:20 Alex Himonas and Fangchi Yan: *Initial-boundary value problems for NLS equations*

11:20–11:45 Alex Himonas and Fangchi Yan: *A higher order quadratic NLS equation on the half-line*

11:45–12:10 Andreas Chatziafratis, Jerry Bona, Hongqiu Chen and Spyridon Kamvissis: *The linear BBM-equation on the quarter-plane, revisited: A novel rigorous approach and unexpected phenomena*

- 10:55–12:10** **SESSION 11**, Ballroom A: [Water waves - I/III](#), Chairs: John Carter and Bernard Deconinck
 10:55–11:20 Katie Oliveras: *Multiscale formulation of water waves: derivation, modeling, and stability analysis*
 11:20–11:45 Eleanor Byrnes: *High Amplitude Stokes Waves in a Finite Depth Fluid*
- 10:55–12:10** **SESSION 15**, Ballroom B: [Recent advances in stability of nonlinear waves](#)
 Chairs: Robert Marangell, Jared Bronski and Graham Cox
 10:55–11:20 Mitchell Curran and Robert Marangell: *The fourth-order nonlinear Schrodinger equation and the Maslov index*
 11:20–11:45 Dave Smith: *Linearized KdV equation on the line with a metric graph defect*
 11:45–12:10 Hewan Shemtaga, Wenxian Shen and Selim Sukhtaiev: *Well-posedness, stability, and bifurcation for Keller-Segel models on compact graphs*
- 10:55–12:10** **SESSION 26**, Ballroom C: [Waves in complex mathematical models of optics and superconductivity](#)
 Chairs: Alejandro Aceves and Jean Guy Caputo
 10:55–11:20 Jacek Gatlik, Tomasz Dobrowolski, and Panayotis G. Kevrekidis: *Kink dynamics in modified sine-Gordon model*
 11:20–11:45 Jean-Guy Caputo: *Mathematical models of flux trapping by superconductors*
 11:45–12:10 Austin Marsteller: *Nonlinear dynamics in non-local Ablowitz lattice models*
- 10:55–12:10** **SESSION 22**, Ballroom D, [Nonlinear waves in lattices - I/II](#)
 Chairs: Christopher Chong and Timothy Faver
 10:55–11:20 Christopher Chong: *Dispersive shock waves in granular chains*
 11:20–11:45 Andrew Hofstrand: *Bridging opposing asymptotic descriptions of discrete breathers on nonlinear lattices*
 11:45–12:10 Dmitry Pelinovsky: *Existence of generalized breathers and transition fronts in time-periodic nonlinear lattices*
- 12:10–1:40 LUNCH AND REGISTRATION
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- 1:40–3:20** **SESSION 2**, Athena Ballroom E: [Evolution equations and integrable systems - II/II](#)
 Chairs: Alex Himonas, Curtis Holliman and Fangchi Yan
 1:40–2:05 Timur Akhunov and Ángel David Martínez: *Illposedness of KdV-type equations using the modified energy method*
 2:05–2:30 Curtis Holliman and Francesca Cozzi: *Current issues regarding the modeling of glioblastomas*
 2:30–2:55 Guher Camliyurt: *Global well-posedness and scattering results for nonlinear wave equations*
 2:55–3:20 John Holmes: *Nonlinear diffusion equations on the half line*
- 1:40–3:20** **SESSION 16**, Ballroom A: [Recent developments on free surface flows](#)
 Chairs: Robin Ming Chen, Samuel Walsh and Miles Wheeler
 1:40–2:05 Huy Nguyen, Ryan Creedon and Walter Strauss: *Proof of the transverse instabilities of Stokes wave*
 2:05–2:30 Jörg Weber: *On bounds for the Froude number for solitary water waves*
 2:30–2:55 Chen-Chih Lai and Michael Weinstein: *Thermal effects on the deformation of a gas bubble in an incompressible liquid*
 2:55–3:20 Robin Ming Chen, Kristoffer Varholm, Samuel Walsh and Miles Wheeler: *Vortex-carrying solitary gravity waves of large amplitude*
- 1:40–3:20** **SESSION 17**, Ballroom B: [Fractional calculus and its application](#), Chair: Yang Liu
 1:40–2:05 Changpin Li: *H^{3N3}-2 σ -based finite difference method for the fractional diffusion-wave equations*
 2:05–2:30 Yang Liu: *SCQ for fractional calculus*
 2:30–2:55 Yue Cao: *Global Mittag-Leffler stability of the delayed fractional-coupled reaction-diffusion system on networks without strong connectedness*
 2:55–3:20 Guoyu Zhang: *A high-order discrete energy decay and maximum-principle preserving scheme for time fractional Allen–Cahn equation*
- 1:40–3:20** **SESSION 10**, Ballroom C: [Recent advances in nonlinear differential equations and applications](#)

- Chairs: Andrei Ludu, Harihar Khanal and Adrian Carstea
- 1:40–2:05 Andrei Ludu: *Nonlinear Liouville problem for the distribution of ice in the Arctic*
- 2:05–2:30 Oleksandr Bobrovnikov and Alexei Rybkin: *Inverse problems for tsunami waves*
- 2:30–2:55 Huaxia Liu and Yongbing Luo:
G-Neutral functional equations with impulsive: existence, attracting and stability
- 2:55–3:20 Dhruva Adhikari: *Inclusions involving perturbed positively homogeneous maximal monotone operators*
- 1:40–3:20** **SESSION 13**, Ballroom D: **Nonlinear partial differential equations and dynamical behavior of solutions - I/II**, Chairs: Wei Lian and Runzhang Xu
- 1:40–2:05 Runzhang Xu: *Global quantitative stability of wave equations with strong and weak dampings*
- 2:05–2:30 Wei Lian and Erik Wahlén: *Transverse instability of line periodic waves to the KP-I equation*
- 2:30–2:55 Xingchang Wang: *Equivalence of weak formulations of stratified steady water waves*
- 2:55–3:20 Zhuang Han: *Qualitative behavior for one-dimensional sixth-order Boussinesq equation with logarithmic nonlinearity*
- 3:20–3:45 COFFEE BREAK
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- 3:50–5:55** **SESSION 19**, Athena Ballroom E: **Stability for nonlinear waves with singularity**
Chairs: Geng Chen and Yannan Shen
- 3:50–4:15 Siming He, *Stability of Close-to-Couette Shear Flows in a Finite Channel*
- 4:15–4:40 Xin Liu, Edriss Titi and Claude Bardos, *Fast-slow dynamics of the quasi-geostrophic approximation*
- 4:40–5:05 Geng Chen, *L2 theory for compressible fluid*
- 5:05–5:30 Yannan Shen, *Stability of dispersive shock for the KdV Burgers' equation*
- 5:30–5:55 Quyuan Lin, *Stable Singularity Formation of the Inviscid Primitive Equations*
- 3:50–5:55** **SESSION 11**, Ballroom A: **Water waves - II/III**, Chairs: John Carter, Bernard Deconinck
- 3:50–4:15 Andre Nachbin: *Faraday waves and the spontaneous synchronization of oscillators*
- 4:15–4:40 John Carter, Diane Henderson and Panos Panayotaros: *The spatial Whitham equation*
- 4:40–5:05 Anastassiya Semenova: *Two-crested Stokes waves*
- 5:05–5:30 Joanna van Liew, John Carter and Diane Henderson: *Modeling broad-frequency-band water-wave experiments*
- 5:30–5:55 Henrik Kalisch: *Collapsing breakers*
- 3:50–5:55** **SESSION 20**, Ballroom B: **Investigation of nonlinear dispersive wave systems - II/III**
Chairs: Min Chen, Olivier Goubet , and Bingyu Zhang
- 3:50–4:15 Xin Yang, Shenghao Li and Bing-Yu Zhang: *Effect of lower order terms on the well-posedness of Majda-Biello systems*
- 4:15–4:40 Deqin Zhou: *Global well-posedness, ill-posedness and long time behavior of solutions of the surface electromigration equation*
- 4:40–5:05 Mathieu Colin and Tatsuya Watanabe: *On a Schrodinger-Poisson system with doping profile*
- 5:05–5:30 Shu-Ming Sun: *On solitary-wave solutions of generalized abcd-Boussinesq system with a Hamiltonian structure*
- 5:30–5:55 Angel Duran: *Existence and stability of solitary wave solutions of Boussinesq-Full Dispersion systems for internal waves*
- 3:50–5:55** **SESSION 21**, Ballroom C: **Advances in integrable systems and inverse scattering - II/IV**
Chairs: Barbara Prinari and Gino Biondini
- 3:50–4:15 Deniz Bilman: *Infinite-order solutions of the AKNS hierarchy and their asymptotic behavior under the mKdV flow*
- 4:15–4:40 Peter Miller: *The explicit solution of the Benjamin-Ono equation with general rational (including non-soliton) initial data*
- 4:40–5:05 Aikaterini Gkogkou: *Soliton gas for the focusing nonlinear Schrödinger equation with box-like initial conditions*

- 5:05–5:30 *Chris Mayo: Well-posedness of a higher-order nonlinear Schrodinger equation on a finite interval*
 5:30–5:55 *Joanne Dong and Peter Miller: New results in the Riemann-Hilbert problem for the semiclassical defocusing Schrodinger equation*
- 3:50–5:55** **SESSION 12**, Ballroom D: [Singular asymptotics for integrable nonlinear waves and related topics, I/III](#)
 Chairs: Deniz Bilman, Robert Buckingham and Peter Miller
- 3:50–4:15 *Manuela Girotti, Tamara Grava, Ken McLaughlin and Joseph Najnudel: Random solitons, soliton gasses, and all that*
 4:15–4:40 *Cade Ballew, Thomas Trogdon and Deniz Bilman: Computing KdV soliton gas solutions*
 4:40–5:05 *Samir Donmazov, Jiaqi Liu and Peter Perry: Long-time asymptotics for the KP I equation with small initial data*
 5:05–5:30 *Roozbeh Gharakhloo and Tomas Lasic Latimer: Graph enumeration via random matrix models, a report on some new results*
 5:30–5:55 *Alexander Moll: Borodin-Olshanski z-measures from the renormalization of quantum Benjamin-Ono periodic traveling waves*
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Tuesday, April 15, 2025

- 7:30–9:30** **REGISTRATION**, Athena Ballroom A
8:00–9:00 **KEYNOTE LECTURE II**, Athena Ballroom E
Vera Hur: Advancing stability through rigorous computation
 Chair: Gino Biondini
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- 9:10–10:00** **SESSION 8**, Athena Ballroom E: [Geometric methods in spectral theory of traveling waves - I/V](#)
 Chairs: Mitch Curran, Yuri Latushkin and Selim Sukhtaiev
 9:10–9:35 *Keith Promislow and Brian Wetton: Faceting and folding in sharp interface gradient flows*
 9:35–10:00 *Stephane Lafortune: On the stability of smooth solutions to peakon equations*
- 9:10–10:00** **SESSION 5**, Ballroom A: [Peakons, kinkons and other weak solutions for nonlinear wave equations - I/II](#)
 Chairs: Stephen Anco, Zhijun Qiao and Vesselin Vatchev
 9:10–9:35 *Ranis Ibragimov: Invariant solutions of nonlinear mathematical modeling of natural phenomena*
 9:35–10:00 *Zhijun Qiao: Peaked solitons and beyond*
- 9:10–10:00** **SESSION 7**, Ballroom B: [Recent and alternate methods for the numerical solution of partial differential equations](#), Chairs: Muhammad Usman and Chaudry Masood Khalique
 9:10–9:35 *Jacob Shapiro and Amanda Criner: Spectral representations in thermography*
 9:35–10:00 *Arunasalam Rahunathan, Abdullah Al Mamun, Alsadig Ali, Abdullah Al-Mamun and Felipe Pereira: A novel multiscale sampling algorithm for subsurface characterization*
- 9:10–10:00** **SESSION 23**, Ballroom C: [Painlevé equations, integrable systems, and related topics - I/III](#)
 Chairs: Anton Dzhamay, Pieter Roffelsen and Alexander Stokes
 9:10–9:35 *Dmitry Korotkin: Tau-functions and monodromy symplectomorphisms*
 9:35–10:00 *Tomas Lasic Latimer: Positive solutions to discrete Painleve equations and orthogonal polynomials*
- 9:10–10:00** **SESSION 21**, Ballroom D: [Advances in integrable systems and inverse scattering - III/IV](#)
 Chairs: Barbara Prinari and Gino Biondini
 9:10–9:35 *Nicholas Ossi, Evans Boadi, Efstathios Charalampidis, Panayotis Kevrekidis and Barbara Prinari: Kuznetsov-Ma breather solutions of the defocusing Ablowitz-Ladik equation with large background amplitude*
 9:35–10:00 *Baofeng Feng and Changyan Shi: A Sasa-Satsuma-mKdV equation and its various soliton solutions*
- 10:00–10:25 COFFEE BREAK
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- 10:30–12:00** **SESSION 13**, Athena Ballroom E: [Nonlinear partial differential equations and dynamical behavior of solutions - II/II](#), Chairs: Wei Lian and Runzhang Xu
- 10:30–10:55 Yitian Wang: *Well-posedness for $p(x)$ -Laplacian parabolic equations with multiple regime on an annulus*
- 10:55–11:20 Bastian Hilder, Erik Wahlen and Giang To: *Global bifurcation of three-dimensional gravity-capillary waves on Beltrami flows*
- 11:20–11:45 Stefano Böhmer and Dag Nilsson: *Solitary axisymmetric capillary water waves*
- 11:45–12:10 Yue Pang: *Global existence and finite time blowup for an anisotropic parabolic equation in weighted variable Sobolev spaces*
- 10:30–12:00** **SESSION 5**, Ballroom A: [Peakons, kinkons and other weak solutions for nonlinear wave equations - II/II](#)
Chairs: Stephen Anco, Zhijun Qiao and Vesselin Vatchev
- 10:30–10:55 Thomas Wolf and Stephen Anco: *Polynomial evolution equations over the octonions with Lax pairs*
- 10:55–11:20 Vesselin Vatchev: *On power series method for nonlinear fluid dynamics equations*
- 11:20–11:45 Lung-Hui Chen: *Uniqueness of inverse spectral problem of non-local Sturm-Liouville operators on star graph*
- 11:45–12:10 Stephen Anco and Zhijun Qiao: *Peakons on a kink background*
- 10:30–12:00** **SESSION 14**, Ballroom B: [Recent advances in algorithmic development for nonlinear PDEs](#)
Chairs: Jia Zhao, Xuelong Gu and Qi Wang
- 10:30–10:55 Xuejian Li, John Singler and Xiaoming He: *Incremental data compression for PDE-constrained optimization*
- 10:55–11:20 Xinfeng Liu: *Exponential time differencing method for a reaction-diffusion system with free boundary*
- 11:20–11:45 Xuelong Gu: *Parallel and energy-preserving schemes based on the partitioned averaged vector field method*
- 11:45–12:10 Jia Zhao: *General numerical framework for structure-preserving reduced order models of thermodynamically consistent reversible-irreversible PDEs*
- 10:30–12:00** **SESSION 23**, Ballroom C: [Painlevé Equations, Integrable Systems, and Related Topics - II/III](#)
Chairs: Anton Dzhamay, Pieter Roffelsen and Alexander Stokes
- 10:30–10:55 Robert Buckingham: *Asymptotics of Umemura rational Painlevé-V functions*
- 10:55–11:20 Haru Negami: *Integral transformations of KZ-type equations and the construction of unitary representations of braid groups*
- 11:20–11:45 Kouichi Takemura: *Symmetry of q -Painlevé equations and Lax pairs*
- 11:45–12:10 Andrii Liashyk: *Integrable spinning fluid*
- 10:30–12:00** **SESSION 1**, Ballroom D: [Nonlinear Waves and Application–Part I/II](#)
Chairs: Jerry Bona, Hongqiu Chen
- 10:30–10:55 Hongqiu Chen: *The long wavelength limit of periodic solutions of water wave models*
- 10:55–11:20 Jose Vega-Guzman: *Minimum-uncertainty squeezed states for a time-dependent Schrödinger equation*
- 11:20–11:45 Junsik Bae, Sang-Hyuck Moon and Kwan Woo: *Emergence of peaked singularities in the Euler-Poisson system*
- 11:45–12:10 Yoshihiro Ueda: *Stability of stationary waves for viscoelastic fluids in half-space*
- 12:10–1:40 LUNCH AND REGISTRATION
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- 1:40–3:20** **SESSION 8**, Athena Ballroom E: [Geometric methods in spectral theory of traveling waves - II/V](#)
Chairs: Mitch Curran, Yuri Latushkin and Selim Sukhtaiev
- 1:40–2:05 Ming Chen, Yang Lan, Yue Liu and Zhong Wang: *Asymptotic stability of smooth solitons for the Camassa-Holm equation*
- 2:05–2:30 Alin Pogan and Yuri Latushkin: *representations of strongly continuous cosine operator families in terms of the eigenvalues and the resonances of the generator*
- 2:30–2:55 Ryan Creedon, Walter Strauss and Huy Nguyen: *Transverse instability of Stokes waves*
- 2:55–3:20 John Zweck, Erika Gallo and Yuri Latushkin: *Spectral stability via the Fredholm determinant of a trace class Birman-Schwinger operator*

- 1:40–3:20** **SESSION 6**, Ballroom A: [Recent developments in nonlinear waves: From rogue waves and blow-ups to shocks, vortices and beyond - I/II](#)
 Chairs: Efstathios Charalampidis, Ricardo Carretero-Gonzalez and Panayotis Kevrekidis
 1:40–2:05 Roy Goodman and Atul Anurag: *The phase space of the three-vortex problem*
 2:05–2:30 Efstathios Charalampidis: *Spectral analysis of blow-up in nonlinear dispersive equations: Theory and computations*
 2:30–2:55 Rahul Kashyap, Satya N. Majumdar and Surajit Sen: *Rogue energy fluctuations as extreme events may be the hallmark of non-integrable nonlinear systems*
 2:55–3:20 Gino Biondini: *Two-dimensional dispersive shock waves in the Kadomtsev-Petviashvili equation*
- 1:40–3:20** **SESSION 24**, Ballroom B: [Recent Advances in photonic systems - I/II](#)
 Chairs: Justin Cole and Ziad Musslimani
 1:40–2:05 Savvas Sardelis, Ziad Musslimani, Andrea Blanco-Redondo, Shuva Roy and Mrinmoy Roy: *Pure-quartic solitons with PT-symmetric nonlinearity*
 2:05–2:30 Alexander Cerjan: *Local topological classification of open and nonlinear photonic systems*
 2:30–2:55 Junshan Lin: *Edge modes in topological photonic crystals*
 2:55–3:20 Michael Nameika and Justin Cole: *Modeling 1D topological insulators in the presence of noisy data*
- 1:40–3:20** **SESSION 11**, Ballroom C: [Water waves - III/III](#)
 1:40–2:05 Bernard Deconinck: *The Benjamin-Feir instability in KdV-like equations with general dispersion and monomial nonlinearity*
 2:05–2:30 Xinyu Zhao, David Nicholls and Jon Wilkening: *Spatially quasi-periodic water waves*
 2:30–2:55 Levent Batakci, Bernard Deconinck and David Nicholls: *The instabilities of 2D periodic traveling water waves*
 2:55–3:20 Sergey Dyachenko: *The Stokes waves on ideal fluid: modulational instability and wave breaking*
- 1:40–3:20** **SESSION 18**, Ballroom D: [Existence and stability of traveling waves - I/II](#)
 Chairs: Anna Ghazaryan, Stephane Lafortune and Vahagn Manukian
 1:40–2:05 Yuri Latushkin and Alin Pogan: *Uniform bounds of families of analytic semigroups and Lyapunov linear stability of planar fronts*
 2:05–2:30 Ross Parker: *Multi-modal solitary wave solutions to a fourth-order nonlinear Schrodinger equation*
 2:30–2:55 Qiliang Wu: *Existence of asymmetric grain boundaries*
- 3:20–3:45 COFFEE BREAK
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- 3:50–5:55** **SESSION 8**, Athena Ballroom E: [Geometric methods in spectral theory of traveling waves - III/V](#)
 Chairs: Mitch Curran, Yuri Latushkin and Selim Sukhtaiev
 3:50–4:15 Jared Bronski, Blake Barker, Vera Hur and Zhao Yang: *Stability for traveling fronts of the KdV-Burgers equation*
 4:15–4:40 Atanas Stefanov: *Kinks of fractional φ^4 models: existence, uniqueness, monotonicity, and sharp asymptotics*
 4:40–5:05 Jared Bronski, Vera Hur and Robert Marangell: *Floquet theory and stability analysis for Hamiltonian PDEs*
 5:05–5:30 Milena Stanislavova: *Existence and stability for the travelling waves of the Benjamin equation*
 5:30–5:55 Mathew Johnson, Brett Ehrman and Stephane Lafortune: *Orbital stability of smooth solitary waves in the Novikov equation*
- 3:50–5:55** **SESSION 6**, Ballroom A: [Recent developments in nonlinear waves: From rogue waves and blow-ups to shocks, vortices and beyond - II/II](#)
 Chairs: Efstathios Charalampidis, Ricardo Carretero-Gonzalez and Panayotis Kevrekidis
 3:50–4:15 Sathyanarayanan Chandramouli, Simeon Mistakidis, Garyfallia Katsimiga and Panayotis Kevrekidis: *Shock waves in the extended Gross-Pitaevskii equation*
 4:15–4:40 Jianke Yang: *Rogue curves in the Davey–Stewartson I equation*

- 4:40–5:05 Annalisa Calini and Thomas Ivey: *A novel geometric realization of the Yajima-Oikawa equations* (181)
 5:05–5:30 Simeon Mistakidis and George Bougas: *Turbulence in driven dipolar gases across the superfluid-to-super solid phase transition*
 5:30–5:55 Ziad Musslimani: *Collapse dynamics for two-dimensional space-time nonlocal nonlinear Schrodinger equations*
- 3:50–5:55** **SESSION 25**, Ballroom B: **Emergent dynamics in integrable systems: soliton gasses and related topics - I/II**, Chairs: Robert Jenkins and Alexander Tovbis
 3:50–4:15 Guido Mazzuca, Manuela Girotti, Tamara Grava, Robert Jenkins, Ken McLaughlin and Maxim Yattselev: *Soliton trains with randomness*
 4:15–4:40 Seung-Yeop Lee and Abril Arenas: *Planar orthogonal polynomials with non-Hele-Shaw type polynomial potentials*
 4:40–5:05 Marco Bertola and Alexander Tovbis: *Minimal Dirichlet energy for fNLS condensates*
 5:05–5:30 Alexander Tovbis and Marco Bertola: *Focusing NLS condensates of minimal averaged intensity*
 5:30–5:55 Thibault Congy, Gennady El and Mark Hoefer: *Wave-mean field interaction in integrable turbulence*
- 3:50–5:55** **SESSION 27**, Ballroom C: **Recent theoretical and numerical advances in fluids and nonlinear optics - II/II**
 Chairs: Denis Silantyev, Sergey Dyachenko and Alexandr Chernyavsky
 3:50–4:15 Barbara Prinari: *Local and global well-posedness for the Maxwell-Bloch equations with inhomogeneous broadening*
 4:15–4:40 Yifeng Mao, Gino Biondini, Gennady El and Mark Hoefer: *Generalized rarefactions and dispersive shock waves for the Korteweg-de Vries equation*
 4:40–5:05 Adilbek Kairzhan: *A Hamiltonian Dysthe equation for water waves*
 5:05–5:30 Pavel M Lushnikov: *Exact solution and integrability of ballistic motion of fluid with free surface*
 5:30–5:55 Denis Silantyev: *Computing nearly-extreme Stokes waves with high-precision using conformal maps*
- 3:50–5:55** **SESSION 12**, Ballroom D: **Singular asymptotics for integrable nonlinear waves and related topics - II/III**
 Chairs: Deniz Bilman, Robert Buckingham and Peter Miller
 3:50–4:15 Harini Desiraju, Alexander Its and Andrei Prokhorov: *Nonlinear steepest descent on a torus: A case study of the Landau-Lifshitz equation*
 4:15–4:40 Maksim Kosmakov: *Nonlinear steepest descent approach to the singular asymptotics of the radial Toda equation*
 4:40–5:05 Giorgio Young, Deniz Bilman, Eliot Blackstone and Peter Miller: *Rational solutions to the mKdV equation*
 5:05–5:30 Robert Buckingham, Robert Jenkins and Peter Miller: *Atypical focusing of semiclassical soliton ensembles in the AKNS hierarchy*
 5:30–5:55 Chris Disenza and Peter Miller: *The semiclassical modified nonlinear Schrodinger equation with Talanov initial data*

7:00–9:00 **BANQUET**
 Thiab Taha: Presentation of Students' Travel Awards

Wednesday, April 16, 2025

- 8:00–9:00** **KEYNOTE LECTURE III**, Athena Ballroom E
 Peter Engels: *Ultracold quantum gases: A prime testbed for studying nonlinear dynamics*
 Chair: Jerry Bona
- 9:10–10:00** **SESSION 8**, Athena Ballroom E: **Geometric methods in spectral theory of traveling waves - IV/V**
 Chairs: Mitch Curran, Yuri Latushkin and Selim Sukhtaiev
 9:10–9:35 Vahagn Manukian, Anna Ghazaryan, Jonathan Waldmann and Priscilla Yinzime: *Traveling front solutions in diffusive SIS model*
 9:35–10:00 Emmanuel Fleurantin, Christopher Jones and Jeremy Marzuola: *Counting gap eigenvalues for the perturbed 3D nonlinear Schrödinger equation by a Maslov index* (10)

- 9:10–10:00** **SESSION 4**, Ballroom A: [Numerical and theoretical solutions of wave and kinetic equations - I/II](#)
Chair: Minh-Binh Tran
- 9:10–9:35 Christof Sparber: *Numerical evidence for singularity formation in defocusing fractional NLS in one space dimension*
- 9:35–10:00 Alejandro Aceves, Sabrina Hetzel and Ross Parker: *On the dynamics and generation of optical quartic solitons*
- 9:10–10:00** **SESSION 18**, Ballroom B: [Existence and stability of traveling waves - II/II](#)
Chairs: Anna Ghazaryan, Stephane Lafortune and Vahagn Manukian
- 9:10–9:35 Panayotis Kevrekidis: *Kinks in nonlinear Klein-Gordon models: from variable nonlinearity to fractional dispersion*
- 9:35–10:00 Brett Ehrman and Mathew Johnson: *Transverse spectral instability of the Novikov-KP equation*
- 9:10–10:00** **SESSION 24**, Ballroom C: [Recent Advances in photonic systems - II/II](#)
Chairs: Justin Cole and Ziad Musslimani
- 9:10–9:35 Troy Johnson: *Bulk and edge solitons of the nonlinear Haldane model*
- 9:35–10:00 Miguel A. Bandres, Bradford Geiger, Enmanuel Guzman and Konrad Tschernig: *Exploring new frontiers in branched flow of light*
- 9:10–10:00** **SESSION 23**, Ballroom D: [Painlevé equations, integrable systems, and related topics - III/III](#)
Chairs: Anton Dzhamay, Pieter Roffelsen and Alexander Stokes
- 9:10–9:35 Kanam Park: *Affine Weyl group actions on a 3×3 Lax form for the q - $(E_6^{(1)})$ Painlevé equation*
- 9:35–10:00 Alexander Stokes and Pieter Roffelsen: *Real and imaginary roots of generalised Okamoto polynomials and partial-rogue waves in the Sasa-Satsuma equation*
- 10:00–10:25 COFFEE BREAK
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- 10:30–12:10** **SESSION 8**, Athena Ballroom E: [Geometric methods in spectral theory of traveling waves - V/V](#)
Chairs: Mitch Curran, Yuri Latushkin and Selim Sukhtaiev
- 10:30–10:55 Montie Avery: *Spectral criteria for front invasion speeds*
- 10:55–11:20 Alim Sukhtayev and Nathaniel Smith: *Splitting quantum graphs*
- 11:20–11:45 Samuel Walsh: *Finite-time self-similar implosion of hollow vortices*
- 11:45–12:10 Anna Ghazaryan, Stephane Lafortune, Yuri Latushkin and Vahagn Manukian: *On the spectrum of the front in a predator-prey model*
- 10:30–12:10** **SESSION 4**, Ballroom A: [Numerical and theoretical solutions of wave and kinetic equations - II/II](#)
Chair: Minh-Binh Tran
- 10:30–10:55 Thomas Chen: *Emergence of quantum Boltzmann dynamics in interacting boson and fermion gases*
- 10:55–11:20 Thomas Hagstrom: *Direct computation of singular solutions for fluid models*
- 11:20–11:45 Kui Ren, Lu Zhang and Yin Zhou: *An energy-based discontinuous Galerkin method for the nonlinear Schrodinger equation with wave operator*
- 11:45–12:10 Benno Rumpf: *Less is different: coherent structures make turbulence in one dimension difficult*
- 10:30–12:10** **SESSION 25**, Ballroom B: [Emergent dynamics in integrable systems: soliton gasses and related topics - II/II](#), Chairs: Robert Jenkins and Alexander Tovbis
- 10:30–10:55 Elliot Blackstone, Peter Miller and Matthew Mitchell: *Universality in the small-dispersion limit of the Benjamin-Ono equation*
- 10:55–11:20 Abey Lopez-Garcia and Alexander Tovbis: *Non-standard Green energy problems in the complex plane*
- 11:20–11:45 Kurt Schmidt, Matt Mitchell and Robert Buckingham: *The small dispersion limit of KdV*
- 10:30–12:10** **SESSION 1**, Ballroom C: [Nonlinear waves and applications - II/II](#)
Chairs: Jerry Bona, Hongqiu Chen
- 10:30–10:55; Weiwei Hu: *Feedback control design for mixing in incompressible flows*
- 10:55–11:20 Min Chen: *Mathematical analysis of bump to bucket problem*
- 11:20–11:45 Pamela Guerrero: *A study of BBM type equations*
- 11:45–12:10 Fernando Lund: *Second harmonic generation of acoustic waves in a nonlinear elastic solid*

10:30–12:10 SESSION 21, Ballroom D: [Advances in integrable systems and inverse scattering - IV/IV](#)

Chairs: Barbara Prinari and Gino Biondini

10:30–10:55 Alexander Chernyavsky, Gino Biondini and John Ringland: *Whitham modulation theory for the Davey-Stewartson system*

12:10–1:40 LUNCH

1:40–3:20 SESSION 12, Athena Ballroom E: [Singular asymptotics for integrable nonlinear waves and related topics - III/III](#), Chairs: Deniz Bilman, Robert Buckingham and Peter Miller

1:40–2:05 Anton Dzhamay, *Orthogonal polynomials and discrete Painlevé equations*

2:05–2:30 Thomas Trogdon: *On the asymptotics of Jacobi-type orthogonal polynomials on multiple intervals with non-analytic weights*

2:30–2:55 Trevor Johnson: *Large-parameter Asymptotics for rational solutions of Painlevé V*

2:55–3:20 Charbel Abi Younes and Tom Trogdon: *Asymptotics for orthogonal polynomials with applications in spectral density estimation*

1:40–3:20 SESSION 20, Ballroom B: [Investigation of Nonlinear Dispersive wave systems - III/III](#)

Chairs: Min Chen, Olivier Goubet and Bingyu Zhang

1:40–2:05 Bingyu Zhang: *Global well-posedness of the initial-boundary value problem of a class generalized KdV equation on a finite interval*

2:05–2:30 Ivonne Rivas and Liliana Esquivel: *L2 well-posedness and bounded controllability for the Korteweg-deVries-Burgers equation in a half-plane*

2:30–2:55 Lionel Rosier and Francisco Vielma: *Control of the intermediate long wave equation on a periodic domain*

2:55–3:20 Marcelo Moreira Cavalcanti, Valeria Neves Cavalcanti, Carole Rosier and Lionel Rosier: *Numerical control of a semilinear wave equation on an interval*

1:40–3:20 SESSION 22, Ballroom D: [Nonlinear Waves in Lattices - II/II](#)

Chairs: Christopher Chong and Timothy Faver

1:40–2:05 J. Douglas Wright: *Approximation of Calogero-Moser lattices by Benjamin-Ono equations*

2:05–2:30 Timothy Faver, J. Douglas Wright and Hermen Jan Hupkes: *Dimer FPUT periodics without symmetry*

2:30–2:55 Akpan, Udoh: *Solitary waves in FPUT Lattices with long range particle interactions*

2:55–3:20 Patrick Sprenger: *Dispersive hydrodynamics of a discrete conservation law*

1:40–3:20 PAPERS, Ballroom C, Chair: John Albert

1:40–2:05 Jerry Bona, Hongqiu Chen, Pamela Guerrero, Cristina Haidau and Sanja Pantic: *The initial-value problem for a Gardner-type equation*

2:05–2:30 John Albert and Jack Arbunich: *Stability and instability of bound states for a regularized NLS equation*

2:30–2:55 Sean Nixon: *Spiral waves and solitons in Floquet lattices*

1:40–2:55 PAPERS, Ballroom A, Chair: TBD

1:40–2:05 Iftikhar Ahmad, Hina Zahid, Hira Ilyas, Muhammad Asif Zahoor Raja and Amna Munir: *Artificial intelligence with Levenberg-Marquardt for calculating the thermal performance of convective radiative straight fin with the triangular shape*

2:05–2:30 Wuchen Li, *Numerical analysis on neural network projected schemes for approximating one-dimensional Wasserstein gradient flows*

2:30–2:55 Darren Crowdy: *Water waves with vorticity and the Schwarz function*