SUNDAY, MARCH 24, 2013

5:00 -- 6:00  REGISTRATION
5:00 -- 7:00  RECEPTION

MONDAY, MARCH 25, 2013

7:00 – 9:00  REGISTRATION

8:00 – 8:30  WELCOME, Masters Hall
Thiab R. Taha / Program Chair and Conference Coordinator
Alan Dorsey / Dean of the Franklin College of Arts and Science, UGA
Robert Beauwens / IMACS President

8:30 – 9:30  KEYNOTE LECTURE, Masters Hall
Harry Yeh: Tsunamis: Interplay between observations and theories
Chair: Thiab Taha

9:30 – 10:00  COFFEE BREAK

10:00 – 10:50  SESSION 1, Masters Hall: Nonlinear Waves – Part I/IV
Chairs: Jerry Bona, Min Chen and Vassilios Dougalis
10:00 – 10:25  Jerry Bona: Global Well-posedness for a system of KdV-type equations

10:00 – 10:50  SESSION 17, Room K: Nonlinear waves and singularities in optics, hydrodynamics, and plasmas: Numerical and analytical approaches – Part I/IV
Chairs: A.O. Korotkevich and P.M. Lushnikov
10:00 - 10:25  D. Appelo: P-adaptive Hermite methods for the Schrödinger equation
10:25 - 10:50  Y. Shimabukuro: Orbital stability of Dirac solitons

10:00 – 10:50  SESSION 5, Room L: Recent development on integrable peakon systems – Part I/IV
Chairs: Zhijun Qiao, Changzheng Qu, Taixi Xu, and Dajun Zhang
10:00 – 10:25  Alex Himonas: Well-posedness of nonlocal evolution equations in spaces of analytic functions
10:25 – 10:50  Jibin Li: On the traveling wave solutions for a nonlinear diffusion-convection-reaction equation: dynamical system approach

10:00 – 10:50  SESSION 13, Room R: Recent developments in dispersive hydrodynamics – Part I/III
Chairs: Gennady El and Mark Hoefer
10:00 – 10:25  Nicolas Pavloff: Formation and detection of analogues of black holes in Bose-Einstein condensates
10:25 – 10:50  Andrea Fratalocchi: Dispersive shocks in systems with competing high order nonlinearities

10:00 – 10:50  SESSION 2, Room F/G: Inverse scattering transform and Riemann-Hilbert problems: Theory
and applications – Part I/III

Chairs: Gino Biondini and Barbara Prinari

10:00 – 10:25 Stephanos Venakides: Smooth parametric dependence of asymptotics of the semiclassical focusing NLS

10:25 – 10:50 Peter Miller: Initial-boundary value problems for the defocusing nonlinear Schrödinger equation in the semiclassical limit

10:00 – 10:50 SESSION 8, Room T/U: Nonlinear Schrödinger models and applications – Part I/III

Chairs: Panayotis Kevrekidis and Ricardo Carretero

10:00 – 10:25 Chandra Raman: Spontaneous domain formation in antiferromagnetic spinor Bose-Einstein condensates

10:25 – 10:50 D. Yan: Dark bright solitons in Bose-Einstein condensates

10:55 – 12:10 SESSION 1, Masters Hall: Nonlinear Waves – Part II/IV

Chairs: Jerry Bona, Min Chen and Vassilios Dougalis

10:55 – 11:20 Min Chen: Stabilities of traveling wave solutions of Boussinesq systems: Numerical and theoretical results

11:20 – 11:45 Bernard Deconinck, Natalie Sheils, Ngiem Nguyen and Rushun Tian: On the spectral stability of solitary wave solutions of the vector nonlinear Schrödinger equation

11:45 – 12:10 Chun-Hsiung Hsia: Global well-posedness for the BBM equation on a quarter plane

10:55 – 12:10 SESSION 17, Room K: Nonlinear waves and singularities in optics, hydrodynamics, and plasmas: Numerical and analytical approaches – Part II/V

Chairs: A.O. Korotkevich and P.M. Lushnikov


11:20 – 11:45 S. Dyachenko: Solitons in dipolar BEC with 1/r interatomic potential

11:45 – 12:10 P.G. Kevrekidis: Theory, computation and experiments for higher-dimensional nonlinear waves in Bose-Einstein condensates: from vortices to vortex rings and beyond

10:55 – 12:10 SESSION 15, Room L: Symbolic and numerical aspects of nonlinear differential and difference equations – Part I/II

Chairs: Willy Hereman and Unal Goktas

10:55 – 11:20 Barbara Prinari: On the inverse scattering transform for the defocusing nonlinear Schrödinger equation with non-vanishing boundary conditions

11:20 – 11:45 Unal Goktas: Symbolic computation of soliton solutions of PDEs through homogenization

11:45 – 12:10 Chris Swierczewski: Calculus on Riemann surfaces using Python

10:55 – 12:10 SESSION 13, Room R: Recent developments in dispersive hydrodynamics – Part II/III

Chairs: Gennady El and Mark Hoefer

10:55 – 11:20 Richard Clift: Riemann problem for the Gardner equation

11:20 – 11:45 Douglas Baldwin: Dispersive shock wave interactions and asymptotics

11:45 – 12:10 Nicholas Lowman: Dispersive shock waves in viscously deformable media

10:55 – 12:10 SESSION 21, Room F/G: Waves in disordered media – Part I/III

Chairs: Ziad Muslimani and Olivier Pinaud


11:20 – 11:45 Justin Cole: Spectral transverse instabilities for low-dimensional localized waves to the 4th-order nonlinear Schrödinger equation

11:45 – 12:10 Olivier Pinaud: Asymptotics of a time-splitting scheme for the random Schrödinger equation with long-range correlations

10:55 – 12:10 SESSION 20, Room T/U: Analysis and applications of nonlinear wave equations – Part I/II

Chairs: Stephen Anco, Ming Chen and Yue Liu
10:55 – 11:20 Atanas Stefanov: Asymptotic stability of standing waves for the 1D Dirac equation
11:20 – 11:45 Alexey Shevyakov: New conservation laws for viscous and inviscid flows in helical, plane and rotational symmetry
11:45 – 12:10 Tuncay Aktosun, Ying Fu, Yue Liu and Byungsoo Moon: Traveling raveling wave solutions to the Burgers-αβ type equations

12:10 – 1:40 LUNCH

1:40 – 3:20 SESSION 9, Masters Hall: Integrable systems, Painlevé equations and applications – Part I/IV
   Chairs: Kenichi Maruno, Bao-Feng Feng, Nalini Joshi, and Kenji Kajiwara
1:40 – 2:05 Nalini Joshi: Quicksilver solutions of a q-discrete Painlevé equation
2:05 – 2:30 Takao Suzuki: Higher order Painlevé systems and hypergeometric functions
2:30 – 2:55 Chris Ormerod: q-Painlevé equations as periodic reductions of integrable lattice equations
2:55 – 3:20 Hayato Chiba: Dynamical systems of compactified Painlevé equations on weighted projective spaces

1:40 – 3:20 SESSION 17, Room K: Nonlinear waves and singularities in optics, hydrodynamics, and plasmas: Numerical and analytical approaches – Part III/V
   Chairs: A.O. Korotkevich and P.M. Lushnikov
1:40 – 2:05 V.E. Zakharov: Nonlinear stage of modulational instability, integrable turbulence, and rogue wave statistics
2:05 – 2:30 L. Chumakova: New dissipative modes in the tropical troposphere
2:30 – 2:55 N. Vladimirova: Oscillations in turbulence-condensate system
2:55 – 3:20 Discussion

1:40 – 3:20 SESSION 3, Room L: Analysis and geometry of nonlinear evolution equations – Part I/III
   Chairs: Dan Geba and Alex Himonas
1:40 – 2:05 Zhijun(George) Qiao: Integrable system with peakon, weak kink, and kink-peakon interactional solutions
2:05 – 2:30 Dionyssis Mantzavinos: The Cauchy problem for the Fokas-Olver-Rosenau-Qiao equation
2:30 – 2:55 Luiz Farah: On the generalized KdV equation
2:55 – 3:20 Curtis Holliman: Comparing the power for two methods of examining group effects on quantitative measures

1:40 – 3:20 PAPERS, Room R
   Chair: Otis Wright
1:40 – 2:05 Otis Wright: On elliptic solutions of a coupled nonlinear Schroedinger system
2:05 – 2:30 Anju Sood and Sanjay Kumar Srivastava: Ψ-eventual stability of differential systems with variable impulses
2:30 – 2:55 Daniele Funaro: Trapping electromagnetic solitons in a ring
2:55 – 3:20 Georges Sadaka: Tsunamis wave modeling: generation, propagation and inundation

1:40 – 3:20 SESSION 21, Room F/G: Waves in disordered media – Part II/III
   Chairs: Ziad Muslimani and Olivier Pinaud
1:40 – 2:05 Alex Elgart: Localization for non-monotone discrete Schrodinger operators
2:05 – 2:30 Alexei Novikov: Passive tracers in a slowly decorrelating random velocity field
2:30 – 2:55 Jason Fleischer: Condensation and vortex thermodynamics in two dimensions
2:55 – 3:20 Adrian Girschik: Coherent wave transmission through strongly disordered media: microwave tubes and topological insulators

1:40 – 3:20 SESSION 8, Room T/U: Nonlinear Schrödinger models and applications – Part II/III
   Chairs: Panayotis Kevrekidis and Ricardo Carretero
1:40 – 2:05 Peter Engels: Investigating quantum dynamics with Bose-Einstein condensates
2:05 – 2:30 Mark Edwards: Stirring a ring Bose-Einstein condensate: vortices and overall circulation
3:50 – 5:55 SESSION 9, Masters Hall: Integrable systems, Painlevé equations and applications – Part II/IV
Chairs: Kenichi Maruno, Bao-Feng Feng, Nalini Joshi, and Kenji Kajiwara
3:50 – 4:15 Yasuhiro Yamada: Lax formalism for discrete Painlevé equations
4:15 – 4:40 Nicholas Witte: Lax pairs for the discrete Painleve equations
4:40 – 5:05 Thomas Bothner: Asymptotics of a Fredholm determinant in random matrix theory and condensed matter physics
5:05 – 5:30 Hajime Nagoya: On the quantum sixth Painlevé equation
5:30 – 5:55 Masashi Hamanaka: ADHM construction of noncommutative instantons

3:50 – 5:55 SESSION 7, Room K: Water Waves – Part I/IV
Chairs: John Carter, Christopher Curtis, Bernard Deconinck, Diane Henderson, Katie Oliveras, Harvey Segur, Olga Trichtchenko, Vishal Vasan
3:50 – 4:15 Katie Oliveras: Stability of stationary periodic solutions to the Euler equations
4:15 – 4:40 Olga Trichtchenko: Stability of gravity waves with surface tension
4:40 – 5:05 Vera Hur: On the Benjamin-Feir instability
5:05 – 5:30 Bernard Deconinck: The pressure problem
5:30 – 5:55 Vishal Vasan: The inverse water-wave problem of bathymetry detection

3:50 – 5:55 SESSION 10, Room L: Modeling and wave phenomena in nonlinear continuum mechanics – Part I/III
Chairs: Ivan Christov, Pedro Jordan and Michail Todorov
3:50 – 4:15 Sandra Carillo: Evolution problems in materials with memory: existence, uniqueness and exponential decay of solutions
4:15 – 4:40 Ronald Mickens: NSFD discretizations of cross-diffusion PDEs in malignant tumor invasion models
4:40 – 5:05 Guy Norton and Robert Purrington: The Westervelt equation with viscous attenuation versus a causal propagation operator coupled to the bioheat equation for biomedical ultrasound: A numerical comparison
5:05 – 5:30 Jean Guy Caputo, Arnaud Knippel and Elie Simo: Oscillations of networks: the role of soft nodes
5:30 – 5:55 Vladimir Gerdjikov and Michail Todorov: Multisoliton interactions for the perturbed Manakov system

Chairs: Richard Kollar and Yuri Latushkin
3:50 – 4:15 Arjen Doelman: Stationary co-dimension 1 structures in the functionalized Cahn-Hilliard model: existence and stability
4:15 – 4:40 Simon Malham: Computing spectra, Grassmannians and symmetry
4:40 – 5:05 Robby Marangell: Stability through a geometric lens
5:05 – 5:30 Graham Cox: Essential spectrum in the absence of arbitrarily long periodic orbits
5:30 – 5:55 Gianne Derks: Viscosity-induced instability for Euler and averaged Euler equations in a circular domain

3:50 – 5:55 SESSION 16, Room F/G: Randomness in Integrable Systems – Part I/II
Chairs: Robert Buckingham and Virgil Pierce
3:50 – 4:15 Marco Bertola: The scaling limit of the Laguerre-Cauchy Matrix model and the Meijer-G random point field
4:15 – 4:40 Sergey Belov: Perturbations of Riemann-Hilbert jump contours with applications to the semiclassical focusing nonlinear Schrodinger equation
4:40 – 5:05 Karl Liechty: Endpoint distribution for a directed polymer in a random medium.
5:05 – 5:30 Enrique Acosta: Leading order asymptotics of a multi-matrix partition function that counts colored
triangulations

5:30 – 5:55 Alexander Tovbis: Behavior of the focusing nonlinear Schrödinger equation at the gradient catastrophe point: Peregrine breathers, poles of the tritronquee solution Painlevé I and rogue wave formation

3:50 – 5:55 PAPERS, Room T/U
  Chair: Yigit Aksoy
3:50 – 4:15 Ayse Bilgen Ekin, Yigit Aksoy and Mehmet Pakdemirli: A new analytical method for Burgers equation
4:15 – 4:40 Matthew Harris, Alexei Rybkin and Lander Verhoe: Numerical realization of the Carrier-Greenspan transform for bays of arbitrary cross-section
4:40 – 5:05 Shaokang Wang, Brian Marks and Curtis Menyuk: Instability mechanisms for pulse solutions of the cubic-quintic mode-locking equation
5:05 – 5:30 Roberto Camassa, Shengqian Chen, Gregorio Falqui, Marco Pedroni and Giovanni Ortenzi: Inertial effects in an incompressible stratified euler fluid in a channel
5:30 – 5:55 Monica Rani and S.P Sharma: Behavior analysis of the washing unit using artificial bee colony technique and vague set theory

TUESDAY, MARCH 26, 2013

8:00 – 9:00 KEYNOTE LECTURE, Masters Hall
  Nicholas Ercolani: Nonlinear evolution equations in combinatorics and probability theory
  Chair: Jerry Bona

9:10 – 10:00 SESSION 7, Masters Hall: Water waves – Part II/IV
  Chairs: John Carter, Christopher Curtis, Bernard Deconinck, Diane Henderson, Katie Oliveras, Harvey Segur, Olga Trichtchenko, Vishal Vasun
9:10 – 9:35 Denys Dutykh: Fast and accurate computation of solitary waves to the free surface Euler equations with arbitrary precision
9:35 – 10:00 Christopher Curtis: Conservation laws and web-solutions for the Benney-Luke equation

9:10 – 10:00 SESSION 17, Room K: Nonlinear waves and singularities in optics, hydrodynamics, and plasmas: Numerical and analytical approaches - Part IV/V
  Chairs: A.O. Korotkevich and P.M. Lushnikov
9:35 – 10:00 A.O. Korotkevich: Inverse cascade of gravity waves in the presence of condensate

9:10 – 10:00 SESSION 18, Room L: Dynamics of neuronal networks – Part I/V
  Chairs: Andrea Barreiro and Gregor Kovacic
9:10 – 9:35 Guillaume Lajoie: Chaos and reliability in fluctuation-driven, balanced spiking networks
9:35 – 10:00 Kendrick Shaw: Variable dwell times and evidence for a stable heteroclinic motor pattern generator

9:10 – 10:00 PAPERS, Room R
  Chair: Ralf Deiterding
9:10 – 9:35 Ralf Deiterding, Stephen Poole and Roland Glowinski: A reliable split-step fourier method for simulating the propagation of ultra-fast pulses in optical communication fibers
9:35 – 10:00 Efim Pelinovsky, Alexei Rybkin and Ira Didenkulova: Nonlinear wave runup in bays of arbitrary cross-section: generalization of the Carrier-Greenspan approach

9:10 – 10:00 SESSION 5, Room F/G: Recent development on integrable peakon systems – Part II/IV
  Chairs: Zhijun Qiao, Changzheng Qu, Taixi Xu, and Dajun Zhang
09:10 – 9:35 Jacek Szmigielski: An inverse spectral problem arising in the Geng-Xue two-component peakon equation
9:35 – 10:00 Lingjun Zhou: Shock creation and Painlevé property of colliding peakons in the Degasperis-Procesi equation
10:00 – 10:30 COFFEE BREAK

10:30 – 12:10 SESSION 20, Masters Hall: Analysis and applications of nonlinear wave equations – Part II/II
Chairs: Stephen Anco, Ming Chen and Yue Liu
10:30 – 10:55 Dan Geba, Alex Himonas and David Karapetyan: Ill-posedness results for generalized Boussinesq equations
10:55 – 11:20 Ian Tice: Stability analysis of the viscous surface-internal wave problem
11:20 – 11:45 Stephen Anco: Symmetry analysis and exact solutions of semilinear Schrodinger equations
11:45 – 12:10 Samuel Walsh, Pierre Germain and Zaher Hani: Resonance for nonlinear dispersive equations with a potential

10:30 – 12:10 SESSION 2, Room K: Inverse scattering transform and Riemann-Hilbert problems: Theory and applications – Part II/III
Chairs: Gino Biondini and Barbara Prinari
10:30 – 10:55 Paolo Santini: IST for vector fields, nonlinear Riemann-Hilbert problems, dispersionless PDEs, and multidimensional wave breaking
10:55 – 11:20 Robert Buckingham: Asymptotics of Painlevé functions and applications to nonlinear wave equations
11:20 – 11:45 Thomas Trogdon: A numerical Riemann-Hilbert approach to the inverse scattering transform
11:45 – 12:10 Emily Fagerstrom: The focusing nonlinear Schrodinger equation with non-zero boundary conditions and piecewise constant initial conditions

10:30 – 12:10 SESSION 15, Room L: Symbolic and numerical aspects of nonlinear differential and difference equations – Part II/II
Chairs: Willy Hereman and Unal Goktas
10:30 – 10:55 Jacob Rezac: A Symbolic Algorithm for the Computation of Conservation Laws from Lax Pairs
10:55 – 11:20 Willy Hereman: Symbolic computation of Lax pairs of systems of partial difference equations using consistency around the cube
11:20 – 11:45 Muhammad Usman: Bifurcations in steady-state solutions for a class of nonlinear partial differential equations using a perturbation method
11:45 – 12:10 Yigit Aksoy: Perturbation-iteration method and solutions for Lotka-Volterra equations

10:30 – 12:10 SESSION 6, Room R: Waves and their applications in climate science
Chairs: Benjamin Akers and Xu Yang
10:30 – 10:55 David Ambrose: Traveling and time-periodic interfacial waves
10:55 – 11:20 Joseph A. Biello: Multiscale asymptotics for tropical atmosphere waves and tropical/midlatitude interactions
11:20 – 11:45 Jon Wilkening: Traveling-standing water waves and microseisms
11:45 – 12:10 Xu Yang: A large deviation framework to analyze metastable behavior in climate systems

10:30 – 11:45 SESSION 5, Room F/G: Recent development on integrable peakon systems – Part III/IV
Chairs: Zhijun Qiao, Changzheng Qu, Taixi Xu, and Dajun Zhang
10:30 – 10:55 Taixi Xu: Solutions to soliton equations
10:55 – 11:20 Zhen Wang: Multi-soliton soltion to two component Camassa-Holm equation
11:20 – 11:45 Jing Kang: Symmetry groups and fundamental solutions for systems of parabolic equations

10:20 -- 12:20 PAPERS, Room T/U
Chair: Runzhang Xu
10:30 – 10:55 Runzhang Xu: Sharp condition of global existence and blow up for nonlinear Schrodinger equation
10:55 – 11:20 Tao Yu and Runzhang Xu: The quenching phenomena for fourth-order nonlinear parabolic equations
11:20 – 11:45 Yanbing Yang and Runzhang Xu: Long time behaviour for a class of fourth order strongly damped wave equations
11:45 – 12:10 Yi Niu, Yanbing Yang and Runzhang Xu: Global existence and nonexistence of strongly damped viscoelastic wave equation

12:10 – 1:40 LUNCH

1:40 – 3:20 SESSION 18, Masters Hall: Dynamics of neuronal networks – Part II/V
   Chairs: Andrea Barreiro and Gregor Kovacic
1:40 – 2:05 Yi Sun: Modeling, simulation, and analysis for Hodgkin-Huxley neuronal network dynamics
2:05 – 2:30 Janet Best: Dynamics of competing stochastic excitatory-inhibitory networks
2:30 – 2:55 Sara Solla: Statistical Inference on Networks of Spiking Neurons
2:55 – 3:20 Lee Deville: Stochastic Neuronal Dynamics on Random Networks

1:40 – 3:20 SESSION 17, Room K: Nonlinear waves and singularities in optics, hydrodynamics, and plasmas: Numerical and analytical approaches – Part V/V
   Chairs: A.O. Korotkevich and P.M. Lushnikov
1:40 – 2:05 I.M. Sigal: Magnetic Vortices, Nielsen-Olesen-Nambu strings and theta functions
2:05 – 2:30 D. A. Zezyulin: Macroscopic Zeno effect and stationary flows in nonlinear waveguides with localized dissipation
2:30 – 2:55 D. Silantyev: Vlasov-Poisson model and it's reduction for laser-plasma 2D simulation
2:55 – 3:20 P.M. Lushnikov: Beyond log-log scaling of critical collapse of nonlinear Schrodinger equation

1:40 – 3:20 SESSION 3, Room L: Analysis and geometry of nonlinear evolution equations – Part II/III
   Chairs: Dan Geba and Alex Himonas
1:40 – 2:05 Henrik Kalisch: Flow properties of surface waves described by the KdV equation
2:05 – 2:30 Ming Chen: Existence and symmetry of ground states to the Boussinesq abcd systems
2:30 – 2:55 John Holmes: Holder continuity of the solution map for Novikov equation
2:55 – 3:20 Matthew Creek: Toward a large data global wellposedness result for a (1+2) Skyrme model

   Chairs: Richard Kollar and Yuri Latushkin
1:40 – 2:05 Dmitry Pelinovsky: Spectral stability of nonlinear waves in KdV-type evolution equations
2:05 – 2:30 Milena Stanislavova: Linear stability analysis for special solutions of second order in time PDE: the higher dimensional case
2:55 – 3:20 Toan Trong Nguyen: Nonlinear stability of source defects

1:40 – 3:20 SESSION 21, Room F/G: Waves in Disordered Media – Part III/III
   Chairs: Ziad Muslimani and Olivier Pinaud
1:40 – 2:05 Ziad Musslimani: Transport and localization in periodic and random nonlinear media
2:05 – 2:30 Hakan Tureci: Pump-induced exceptional points in lasers above threshold
2:30 – 2:55 K. G. Makris: Nonlinear dynamics in non-Hermitian optical potentials

1:40 – 3:20 TUTORIAL, Room T/U
   Gennady El: Whitham equations and dispersive shock waves

3:20 – 3:50 COFFEE BREAK
3:50 – 5:55  SESSION 1, Masters Hall: Nonlinear Waves – Part III/IV
Chairs: Jerry Bona, Min Chen and Vassilios Dougalis
3:50 – 4:15 Jeongwhan Choi: Capillary gravity waves over an obstruction
4:40 – 5:05 Shu-Ming Sun: 3D waves bifurcating from 2D solitary waves on water with small surface tension
5:05 – 5:30 Christof Sparber: On Schrödinger type equations with nonlinear damping
5:30 – 5:55 Hongqiu Chen: Solitary waves and their stability for a class of systems of nonlinear dispersive equations: BBM-BBM type

3:50 – 5:55  SESSION 7, Room K: Water Waves – Part III/IV
Chairs: John Carter, Christopher Curtis, Bernard Deconinck, Diane Henderson, Katie Oliveras, Harvey Segur, Olga Trichtchenko, Vishal Vasan
3:50 – 4:15 Stefan Mancas: Solutions of viscous Benjamin, Bona & Mahony (BBM) equation
4:15 – 4:40 Zhiwu Lin: Invariant manifolds for some model equations of water waves
4:40 – 5:05 Wooyoung Choi: Nonlinear water waves in shear flows
5:05 – 5:30 Shahrdad Sajjadi: Asymptotic analysis of wind over unsteady surface waves
5:30 – 5:55 Francesco Fedele: Vortexons of axisymmetric Navier Stokes flows and peakons of deep-water gravity waves

3:50 – 5:55  SESSION 9, Room L: Integrable systems, Painlevé equations and applications – Part III/IV
Chairs: Kenichi Maruno, Bao-Feng Feng, Nalini Joshi, and Kenji Kajiwara
3:50 – 4:15 Jonathan Nimmo: Discrete inverse scattering for compact support potentials
4:15 – 4:40 Claire Gilson: A direct method in ultra-discrete integrable systems
4:40 – 5:05 BaoFeng Feng: Integrable discretization and self-adaptive moving mesh method for a class of nonlinear wave equations
5:05 – 5:30 Kenji Kajiwara: Some exact results in discrete differential geometry
5:30 – 5:55 Kenichi Maruno: Gauge transformations of discrete integrable systems

Chairs: Richard Kollar and Yuri Latushkin
3:50 – 4:15 Anna Ghazaryan: Unstable fronts in a gasless combustion model
4:15 – 4:40 Matt Holzer: Accelerated fronts in a two stage invasion process
4:40 – 5:05 Mat Johnson: On the instability of periodic wave trains in a generalized Boussinesq equation
5:05 – 5:30 Zoi Rapti: Multi-breather stability in nonlinear Klein-Gordon chains: nonstandard interactions, nonstandard phase shifts, and bifurcations
5:30 – 5:55 Jared Bronski: Stability and synchronization in the Kuramoto model

3:50 – 5:55  SESSION 16, Room F/G: Randomness in Integrable Systems – Part II/II
Chairs: Robert Buckingham and Virgil Pierce
3:50 – 4:15 Virgil Pierce: The enumeration of three and five valent maps with random matrix partition functions
4:15 – 4:40 Patrick Waters: Generating functions for maps with arbitrary degree structure
4:40 – 5:05 Seung Yeop Lee: Random normal matrices via Riemann-Hilbert problems
5:05 – 5:30 Irina Nenciu: On confinement and stochastic particles
5:30 – 5:55 Ken McLaughlin: Asymptotic analysis of a class of 2D orthogonal polynomials with applications to the normal random matrix model

3:50 – 5:55  SESSION 10, Room T/U: Modeling and wave phenomena in nonlinear continuum mechanics – Part II/III
Chairs: Ivan Christov, Pedro Jordan and Michail Todorov
3:50 – 4:15 Sanichiro Yoshida: Wave dynamics in deformation and fracture of solid-state media
4:15 – 4:40 Len Margolin: Discrete thermodynamics
4:40 – 5:05 Pedro Jordan: Nonlinear acoustic propagation in thermoviscous, thermally relaxing fluids
5:05 – 5:30 Ganesh Tiwari and Ashok Puri: Numerical analysis of non-Fickian diffusion equation with a general source
5:30 – 5:55 David Rossmanith and Ashok Puri: Role of Brinkman viscosity on poroacoustic flow
7:00 – 9:00 BANQUET  
Speaker: TBA  
Thiab Taha: Presentation of Best Student Paper Awards

WEDNESDAY, MARCH 27, 2013

8:00 – 09:00 KEYNOTE LECTURE, Masters Hall  
Beatrice Pelloni: The effect of boundary conditions on linear and nonlinear waves  
Chair: Bernard Deconinck

9:00 – 10:30 POSTER PAPERS, Pecan Tree Galleria

Lake Bookman and Mark Hoefer: Perturbations of magnetic solitons  
Roberto Camassa, Shengqian Chen, Wooyoung Choi, Tae-Chang Jo, and Roxana Tiron: Internal long wave generation in a two-layer fluid system  
Edward Charlesworth, Katie Oliveras and Vishal Vasan: Pressure along streamlines  
Paul Christodoulides, Georgios Florides, Elisavet Theofanous, Lazaros Lazari and Vassilios Messaritis: Effect of the ground properties on the fluid temperature of Geothermal Heat Exchangers  
Richard Clift and Gennady El: Undular bore theory for the Gardner equation  
Leonidas Deligiannidis and Thiab Taha: A GUI tool for numerical simulation methods  
Brice Eichwald, Didier Clamond and Marc Francius: Modified exponential integrator for nonlinear waves  
Alex Elgart: Localization for non-monotone discrete Schrodinger operators  
Emily Fagerstrom, Mark J. Ablowitz and Gino Biondini: The nonlinear Schrodinger equation with real spectral singularities  
Pamela Fuller, Gregor Kovacic and David Cai: Random and regular dynamics of stochastically driven neuronal networks  
Lytle George: Do the wave: Applying finite elements to the shallow water equations  
Alexander Minakov: Step-initial function to the MKdV equation: Hyper-elliptic long-time asymptotics of the solution  
Katelyn Plaisier Leisman and Alejandro Aceves: Dynamics of two slowly varying waveguides in the presence of weak nonlinearity  
Jacob Rezac and Willy Hereman: A symbolic algorithm for the computation of conservation laws from Lax pairs  
Jennifer Rouan and Thiab Taha: Using CUDA for GPUs with MPI to solve nonlinear evolution equations  
Nathan Sanford, Keri Kodama and John Carter: Stability of traveling-wave solutions to the Whitham equation  
Patrick Sprenger, Katie Oliveras and Vishal Vasan: Stability of waves with constant vorticity  
Danhua Wang and Alejandro Aceves: Light propagation in two dimensional plasmonic arrays  
Alfredo Wetzel: The zero-dispersion limit of the Benjamin-Ono equation with negative initial data  
John Zweck and Curtis Menyuk: Minimization of timing jitter near zero-average dispersion in an amplifier similariton fiber laser

9:30 – 10:00 COFFEE BREAK

10:30 – 12:10 SESSION 1, Masters Hall: Nonlinear Waves – Part IV/IV  
Chairs: Jerry Bona, Min Chen and Vassilios Dougalis

10:30 – 10:55 Olivier Goubet: Theory and numerical simulation on the exact boundary controllability of the second-order Maxwell system

10:55 – 11:20 Angel Duran: Fixed-point algorithms for the numerical generation of traveling waves

11:20 – 11:45 William Fullmer: Stability, verification and convergence of a well-posed linearly unstable two equation problem

11:45 – 12:10 Juan-Ming Yuan: Some results for complex-valued nonlinear wave equations
Chairs: Gino Biondini and Barbara Prinari


10:55 – 11:20 Gregor Kovacic: Integrable, non-integrable, and stochastic dynamics in resonant light-matter interaction

11:20 – 11:45 Francesco Demontis: Direct scattering problem for Zakharov-Shabat system: characterization of scattering data

11:45 – 12:10 Daniel Kraus: The focusing and defocusing Manakov system with non-zero boundary conditions at infinity

10:30 – 12:10 SESSION 7, Room L: Water waves – Part IV/IV  
Chairs: John Carter, Christopher Curtis, Bernard Deconinck, Diane Henderson, Katie Oliveras, Harvey Segur, Olga Trichtchenko, Vishal Vasan

10:30 – 10:55 David George: Non-hydrostatic effects and dispersion in depth-averaged models for wave propagation: application to tsunamis and flood inundation

10:55 – 11:20 John Carter: Dispersion in shallow water

11:20 – 11:45 Harvey Segur: The role of dissipation in the evolution of ocean swell

11:45 – 12:10 Diane Henderson: Surface waves and dissipation: experiments

10:30 – 12:10 PAPERS, Room R  
Chairs: Sumit Vishwakarma

10:30 – 10:55 Sumit Vishwakarma and Shishir Gupta: Torsional wave dispersion relation in a Self-Reinforced layer resting over a viscoelastic half space

10:55 – 11:20 Salim Messaoudi and Muhammad Mustafa: A general stability result for a quasilinear viscoelastic equation

11:20 – 11:45 Aissa Guesmia: Well-posedness and exponential stability of an abstract evolution equation with infinite memory and time delay

11:45 – 12:10 Jianhua Zeng and Yueheng Lan: Two-dimensional solitons in parity-time linear lattices

10:30 – 12:10 SESSION 12, Room F/G: Numerical simulations for solving nonlinear wave equations  
Chairs: Thiab Taha and Constance Schober

10:30 – 10:55 Constance Schober: Conformal Integrators for damped Hamiltonian PDEs

10:55 – 11:20 Jue Wang and Runzhang Xu: Dynamics and long time convergence of the EFK equation under numerical discretization

11:20 – 11:45 Avner Peleg and Debananda Chakraborty: Stable long-distance propagation of solitons in two-channel waveguides with saturable absorption

11:45 – 12:10 Frederick Moxley, David Chuss and Weizhong Dai: An implicit generalized finite-difference time-domain scheme for solving nonlinear Schrodinger equations

10:30 – 12:10 SESSION 8, Room T/U: Nonlinear Schrödinger models and applications – Part III/III  
Chairs: Panayotis Kevrekidis and Ricardo Carretero

10:30 – 10:55 Mark A. Hoefer: Perturbed magnetic droplet solitons

10:55 – 11:20 Vladimir V. Konotop: Discrete solitons in PT-symmetric lattices

11:20 – 11:45 Tsampikos Kottos: Asymmetric Wave Transport in Structures with Parity-Timesymmetry

11:45 – 12:10 Lev Ostrovsky: Radiation decay of cnoidal waves within the rotation modified KdV equation

12:10 – 1:40 LUNCH

1:40 – 3:20 SESSION 5, Masters Hall: Recent development on integrable peakon systems – Part IV/IV  
Chairs: Zhijun Qiao, Changzheng Qu, Taixi Xu, and Dajun Zhang

1:40 – 2:05 Gino Biondini: Boundary value problems for the Ablowitz-Ladik system
2:05 – 2:30  Changzheng Qu: Well-posedness, wave breaking and peakons for a generalized modified μ-CH equation
2:30 – 2:55  Mathew Baxter, Roy Choudhury and Robert Van Gorder: Zero curvature representation, bi-Hamiltonian structure, and an integrable hierarchy for the Zakharov-Ito system

1:40 – 3:20  SESSION 3, Room K: Analysis and geometry of nonlinear evolution equations – Part III/III
   Chairs: Dan Geba and Alex Himonas
1:40 – 2:05  Mats Ehrnström: On the existence and stability of solitary-wave solutions to a class of evolution equations of Whitham type
2:05 – 2:30  Michael Goldberg: Wave propagation on periodic planar graphs
2:30 – 2:55  Ryan Thompson: Non-uniform dependence of the 2-component Camassa-Holm system
2:55 – 3:20  Xiang Zhang: Small data global well-posedness and scattering for the 2+1 dimensional equivariant Faddeev model

1:40 – 3:20  SESSION 11, Room L: Dynamical systems, curvature driven flows, and pattern formation
   Chairs: Thomas Bellsky and Greg Hayrapetyan
1:40 – 2:05  Thomas Bellsky: Adiabatic stability for a generalized Gray-Scott equation
2:05 – 2:30  Shibin Dai: Competitive geometric evolution under the functionalized Cahn-Hilliard equation
2:30 – 2:55  Gurgen Hayrapetyan: Spectra of functionalized operators arising from hypersurfaces
2:55 – 3:20  Marco Morandotti: Renormalized energy and dynamics for a system of screw dislocations

   Chairs: Richard Kollar and Yuri Latushkin
1:40 – 2:05  Vadim Zharnitsky: High frequency waves in nonlinear dispersive equations on compact domains
2:05 – 2:30  Blake Barker: Numerical stability analysis for thin film flow: toward rigorous verification
2:30 – 2:55  Vitali Vougalter: Existence and nonlinear stability of stationary states for the semirelativistic Schroedinger-Poisson system
2:55 – 3:20  Todd Kapitula: Instability indices for matrix pencils

1:40 – 3:20  SESSION 18, Room F/G: Dynamics of neuronal networks – Part III/V
   Chairs: Andrea Barreiro and Gregor Kovacic
1:40 – 2:05  Andrea K. Barreiro: Low-dimensional descriptions of neural networks
2:05 – 2:30  Jiwei Zhang: Population model of neuronal networks dynamics between homogeneity and synchrony
2:30 – 2:55  Victor Barranca: Data compression in sensory signal processing
2:55 – 3:20  Hermann Riecke: Spiking and Bursting in Gap-Junction Coupled Axonless Retinal Amacrine Cells

1:40 – 3:20  TUTORIAL, Room T/U
   Alex Townsend: Chebfun: Numerical computing with functions

3:20 – 3:50  COFFEE BREAK

3:50 – 5:55  PAPERS, Masters Hall
   Chair: Hassan Fathallah-Shaykh
3:50 – 4:15  Ahmed Behatnia and Moez Daoulati: Behavior of the energy for the lame system in bounded domain with nonlinear damping and external force
4:15 – 4:40  Mohammad Kafini: On the stabilization of a Cauchy viscoelastic problem with singular kernel and nonlinear source
4:40 – 5:05  Hassan Fathallah-Shaykh: Conditions for non-convergence, limit cycles, and stability in complete networks
5:05 – 5:30  M. S. Ismail: Alternating direction implicit scheme for solving two-dimensional coupled nonlinear Schroedinger equation
5:30 – 5:55  Erwin Suazo, Sergei K. Suslov and Jose Vega-Guzman: The Riccati system and a diffusion-type equation
3:50 – 5:55 SESSION 10, Room K: Modeling and wave phenomena in nonlinear continuum mechanics – Part III/III
   Chairs: Ivan Christov, Pedro Jordan and Michail Todorov
3:50 – 4:15 Kert Tamm and Andrus Salupere: Numerical study of the wave propagation in Mindlin-type microstructured solids
4:15 – 4:40 Andrus Salupere and Martin Lints: On existence of hidden solitons in solitonic structures
4:40 – 5:05 Ivan Christov: Variational approximation of repelling and attracting solitons in coupled nonlinear Schrodinger equations
5:05 – 5:30 Brenton Lemesurier: Airy-like pulses in models of large molecular chains, and conservative numerical methods for quasi-linear Hamiltonian systems
5:30 – 5:55 Matthew Beauregard and Qin Sheng: Adaptive splitting algorithms in application to singular reaction-diffusion equations over elliptical domains

3:50 – 5:55 SESSION 13, Room L: Recent developments in dispersive hydrodynamics – Part III/III
   Chairs: Gennady El and Mark Hoefer
3:50 – 4:15 Alfred Osborne: Constructing and analyzing asymptotic solutions of nonintegrable nonlinear PDEs with Riemann theta functions
4:15 – 4:40 Pierre Suret: Wave turbulence in 1D nonlinear Schrödinger equation
4:40 – 5:05 Karima Khusnutdinova: On versions of the Kadomtsev-Petviashvili equation
5:05 – 5:30 Naum Gershenzon: Sine-Gordon modulation solutions: application to macroscopic friction, earthquakes and fault dynamics
5:30 – 5:55 Alessandro Arsie: Integrable viscous conservation laws

3:50 – 5:55 SESSION 9, Room R: Integrable systems, Painlevé equations and applications – Part IV/IV
   Chairs: Kenichi Maruno, Bao-Feng Feng, Nalini Joshi, and Kenji Kajiwara
3:50 – 4:15 Masataka Kanki: Discrete integrable equations over finite fields and their solutions
4:15 – 4:40 Kazuki Maeda: Discrete integrable systems and matrix eigenvalue algorithms
4:40 – 5:05 Nobutaka Nakazono: Solutions to the discrete Painlevé systems arising from two types of orthogonal polynomials
5:05 – 5:30 Igor Rumanov: Integrable PDEs from random matrix theory
5:30 – 5:55 Anton Dzhamay: Discrete Schlesinger transformations and difference Painlevé equations

3:50 – 5:55 SESSION 19, Room F/G: Wave dynamics in coupled systems – Part I/III
   Chairs: Daniel Toundykov, Lorena Bociu
3:50 – 4:15 George Avalos: Rational decay properties of some coupled PDE systems
4:15 – 4:40 Giovanna Guidoboni: Mathematical modeling of the retinal circulation
4:40 – 5:05 Piotr Rybka: A sixth-order Cahn-Hilliard type equation
5:05 – 5:30 Francesca Bucci: On PDE models for (some) acoustic-structure or fluid-solid problems: optimal boundary control, theoretical results and sharp regularity
5:30 – 5:55 Lorena Bociu: Weak and regular solutions for wave equations with nonlinear sources and damping

3:50 – 5:55 PAPERS, Room T/U
   Chair: Nasser-Eddine Tatar
3:50 – 4:15 Jakob Löber, Eckehard Schöll and Harald Engel: Controlling the position of fronts
4:15 – 4:40 Yannan Shen, Panayotis Kevrekidis, Nathaniel Whitaker, Nikolaos Karachalios and Dimitris Frantzeskakis: Finite-temperature dynamics of matter-wave dark solitons in linear and periodic potentials
4:40 – 5:05 Sarit Maitra: Traveling wave solutions of Fisher's equation and diffusive Lotka-Volterra equations
5:05 – 5:30 Nasser-Eddine Tatar: On the stabilization of non-dissipative viscoelastic problems
5:30 – 5:55 David Rossmannith and Ashok Puri: Role of Brinkman Viscosity on Poroacoustic Flow

THURSDAY, MARCH 28, 2013

8:00 – 9:00 KEYNOTE LECTURE, Room K/L
   Curtis Menyuk: Self-similarity, integrability, and accordions in transient stimulated Raman scattering
9:05 – 9:55 SESSION 14, Room K/L: Quasilinear and dispersive partial differential equations – Part I/II  
Chair: David Ambrose  
9:05 – 9:30 Sarah Raynor: Towards soliton stability in spaces of rough data for the KdV equation  
9:30 – 9:55 Jason Metcalfe: The Strauss conjecture on black hole backgrounds

9:05 – 9:55 SESSION 19, Room T/U: Wave dynamics in coupled systems – Part II/III  
Chairs: Daniel Toundykov, Lorena Bociu  
9:05 – 9:30 Yongjin Lu: Uniform stability for energy in a nonlinear fluid-structure interaction with nonlinear viscous damping  
9:30 – 9:55 Suncica Canic: A constructive existence proof for a nonlinear, moving boundary problem arising in modeling blood flow through elastic arteries

9:05 – 9:55 SESSION 18, Room V/W: Dynamics of neuronal networks – Part IV/V  
Chairs: Andrea Barreiro and Gregor Kovacic  
9:30 – 9:55 Zachary Kilpatrick: Noise-induced phenomena in continuum neural field equations

09:55 – 10:20 COFFEE BREAK

10:20 – 12:00 SESSION 14, Room K/L: Quasilinear and dispersive partial differential equations – Part II/II  
Chair: David Ambrose  
10:20 – 10:45 Timur Akhunov: A sharp condition for the well-posedness of the linear KdV equation on R  
10:45 – 11:10 Jeremy Marzuola: Quasilinear Schrödinger equations  
11:10 – 11:35 Gideon Simpson: Solitons and singularities in a generalized derivative nonlinear Schrodinger equation

10:20 – 11:35 SESSION 19, Room T/U: Wave dynamics in coupled systems – Part III/III  
Chairs: Daniel Toundykov, Lorena Bociu  
10:20 – 10:45 Jing Zhang: Min-max game theory for elastic and visco-elastic fluid structure interactions  
10:45 – 11:10 Scott Hansen: Stability and Feedback Stabilization of Layered Beam Systems  
11:10 – 11:35 Daniel Toundykov: Nonlinear boundary feedbacks for von Karman plates in high velocity airflows

10:20 – 11:10 SESSION 18, Room V/W: Dynamics of neuronal networks – Part V/V  
Chairs: Andrea Barreiro and Gregor Kovacic  
10:20 – 10:45 Yu Hu: Linking graph motifs and collective spiking in neuronal networks  
10:45 – 11:10 Deena Schmidt: Analysis of the stochastic shielding approximation for Markovian ion channel models via random graphs

12:00 – 1:30 LUNCH

THE END OF THE PROGRAM