**FLORIDA STATE UNIVERSITY**

**Department of Mathematics**

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**Second Joint Alabama-Florida Conference on Differential Equations, Dynamical Systems and Applications**

**May 18-19, 2024**



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**FLORIDA STATE UNIVERSITY**

**2nd Joint AL-FL Conference on Differential Equations**

**and Dynamical Systems**

**Organizing Committee**

Ziad Musslimani Florida State University

Svetlana Roudenko Florida International University

Milena Stanislavova University of Alabama Birmingham

Selim Sukhtaiev Auburn University

**Sponsored by**

National Science Foundation (NSF 2342407)

College of Arts and Sciences Florida State University

Department of Mathematics Florida State University

**Conference Information**

**All plenary talks will be in Room 101**

James Love Building (Mathematics Department)

1017 Academic Way, Tallahassee, FL 32304 **[Directions to LOVE BUILDING](https://www.facilities.fsu.edu/space/buildings/directions.php?bldg=0116)**

**All talks in session A will be in Room 102**

James Love Building (Mathematics Department)

1017 Academic Way, Tallahassee, FL 32304

**All talks in session B will be in Room 107**

James Love Building (Mathematics Department)

1017 Academic Way, Tallahassee, FL 32304

**Lunch will be at Suwannee Dining Hall**

143 Honors Way   
William Johnston Building [**Map & Directions**](http://maps.google.com/?q=143+Honors+Way+William+Johnston+Building++Tallahassee%2c+FL+32304+)

**Dinner and poster sessions will be in Exhibition Rooms**

at Center for Global Engagement (**CGE**)

110 South Woodward Avenue: [**110 South Woodward Avenue Tallahassee, FL 32306**](https://goo.gl/maps/uBHTFcUz5YzZH6yX9)

**Parking is available around the**

James Love Building (Mathematics Department)

1017 Academic Way, Tallahassee, FL 32304 **[Directions to LOVE BUILDING](https://www.facilities.fsu.edu/space/buildings/directions.php?bldg=0116)**

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**CONFERENCE SCHEDULE**

**2nd Joint AL-FL Conference on Differential Equations**

**and Dynamical Systems**

**Saturday: May 18, 2024**

**08:00-08:45 Room 204 A Coffee and Registration**

**08:45-11:30 Room 101 Opening Remarks and Plenary Talks**

**08:45-09:00 Opening Remarks Chair of the Mathematics Department**

**Washington Mio and Associate Dean**

**of the College of Arts and Sciences Tim Logan**

**09:00-10:00 Plenary Talk Gigliola Staffilani**

**Massachusetts Institute of Technology**

Some recent developments in wave turbulence theory

**10:00-11:00 Plenary Talk Alexander Kiselev**

**Duke University**

The flow of polynomial roots under differentiation

**11:00-11:30 Room 204 A Coffee Break**

**11:30-01:00 Session A Room 102**

11:30-12:00 **Abba Ramadan, University of Alabama**

Curvature-Driven Complexity in the Defocusing Parametric

12:00-12:30 **Iryna Petrenko, Florida International University**

NLS with higher order dispersion

12:30-01:00 **Gabriela Jaramillo, University of Houston**

Existence of Spiral Waves in Oscillatory Media with

Nonlocal Coupling

**11:30-01:00 Session B Room 107**

11:30-12:00 **Alexandra Smirnova, Georgia State University**

Theoretical and Numerical Study of Case Reporting

Rate with Application to Epidemiology

12:00-12:30 **Anna Ghazaryan, Miami University, Ohio**

On the stability of fronts in the diffusive Rosenzweig-

MacArthur model

12:30-01:00 **Hewan Shemtaga, Auburn University**

Global existence and asymptotic behavior of chemotaxis models on a compact metric graph

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**CONFERENCE SCHEDULE**

**2nd Joint AL-FL Conference on Differential Equations**

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**Saturday: May 18, 2024**

**01:00-02:45 Lunch Break (Suwannee Seminole Dining Hall)**

**02:45-04:15   Session A Room 102**

02:45-03:15 **Atanas Stefanov, University of Alabama at Birmingham**

Solitary waves for the Whitham equation

03:15-03:45 **Oleg Asipchuck, Florida International University**

Existence and non-existence of ground state solutions for  magnetic NLS

03:45-04:15 **Miguel A. Bandres, University of Central Florida, College of Optics and Photonics**

Light Meets Math: From Modeling Differential Equations through Laser Resonators to Branched Flow of Light

**02:45-04:15   Session B Room 107**

02:45-03:15 **Alim Sukhtayev, Miami University, Ohio**

Renormalized oscillation theory for Hamiltonian pencils

03:15-03:45 **Graham Cox, Memorial University in St. John’s, Newfoundland, Canada**

Geometry and topology of spectral minimal partitions

03:45-04:15 **Tim Faver, Kennesaw State University**

Periodic traveling waves in dimer Fermi-Pasta-Ulam

Tsingou lattices without symmetry

**04:20-05:20 Room 101**

**04:20-05:20 Plenary Talk Nancy Rodriguez, University of Colorado at Boulder**

A journey in the use of mathematical models to gain insight into ecological and sociological phenomena

**05:20-06:20 Room CGE Poster Sessions at the Center for Global Engagement**

**06:30–08:00 Room CGE Conference Dinner at the Center for Global Engagement**

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**CONFERENCE SCHEDULE**

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**Sunday: May 19, 2024**

**08:30-09:00 Good Morning Coffee**

**09:00-10:00 Room 101**

**09:00-10:00 Plenary Talk Percy Deift, Courant Institute, New York University**

On the open Toda chain with external forcing

**10:15-11:45  Session A Room 102:**

10:15-10:45 **Sara Pollock, University of Florida**

Filtered Anderson Acceleration for Numerical PDE

10:45-11:15 **Troy Johnson, University of Colorado**

Approximating rational solutions to partial differential

equations using Malmquist–Takenaka rational functions.

11:15-11:45 **Rachidi Salako, University of Nevada Las Vegas**

Dynamics of classical solutions to a diffusive epidemic model

with varying population demographics

**10:15-11:45  Session B Room 107**

10:15-10:45 **Martin Bauer, Florida State University**

Geometric Analysis of the Generalized Surface Quasi-Geostrophic Equations

10:45-11:15 **Stephen Preston, City University of New York**

Liouville comparison theory for blowup of Euler-Arnold equations

11:15-11:45 **Maja Taskovic, Emory University**

On the well-posedness of the Boltzmann hierarchy

**12:00-01:00 Room 101**

**12:00-01:00 Plenary Talk Andrea Bertozzi, University of California Los Angeles**

Title to be announced.

**01:00-02:45 Lunch Break Suwannee Seminole Dining Hall**

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**Sunday: May 19, 2024**

**02:45-04:45  Session A Room 102**

02:45-03:15 **Igor Kukavica, University of Southern California**  Local existence for a fluid-structure interaction problem

03:15-03:45 **Wojtek Ozanski, Florida State University**

Instantaneous gap loss of Sobolev regularity for the 2D

incompressible Euler equations.

03:45-04:15 **Nick Moore, Colgate University**

Reversals of the large-scale circulation in thermal convection

04:15-04:45 **Gong Chen, Georgia Institute of Technology**

Recovery of the nonlinearity from the modified scattering map

**02:45-04:45  Session B Room 107**

02:45-03:15 **Anh Khoa Vo, Florida A & M University**

Convexification and experimental data for a 3D inverse scattering problem with the moving point source

03:15-03:45 **Solomon Manukure, Florida A & M University**

Some exact solutions associated with a modified (2+1)

dimensional nonlinear equation with variable coefficients

03:45-04:15 **Malbor Asllani, Florida State University**

The formation theory of chimera patterns

04:15-04:45 **Mark Sussman, Florida State University**

Coupling the level set method to moments and particles for computing solutions to N-phase multiphase flows with phase change.

**04:45-05:00 Room 101 Closing Remarks**

**04:45-05:00 Ziad Musslimani, Florida State University**

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**Thank you for visiting Florida State University Department of Mathematics**