Nineteenth Annual

Southeastern-Atlantic Regional Conference on Differential Equations

University of Richmond, October 22-23, 1999

Program At-A-Glance

Friday

Time	*Jepson 118*
1:30	Registration Opens
2:50-3:00	Welcome
3:00-4:00	**Plenary Lecture:** Margaret Cheney: "Electrical Impedance Tomography"
4:00-4:30	Break

Contributed Talks

Time	**Session Ia** *Jepson 103*	**Session Ib** *Jepson 109*	**Session Ic** *Jepson 107*	**Session Id** *Jepson 102*
4:30-4:55	Michael K.-H. Kiessling	Rachel Belinsky	Bhagat Singh	Dorina Mitrea
4:55-5:20	Dimiter Vassilev	Julian L. Xu	Bo Zhang	Irina Mitrea
5:20-5:45	Carl Lutzer	Julian L. Xu	Youssef N. Raffoul	Gieri Simonett
5:45-6:10	Lizabeth Rachele	Yuncheng You	Christopher Winfield	Robert Sims
6:10-6:35	C. Maeve McCarthy	Andriy Blazhievskiy	John Davis	E.Tsekanovskii
6:35-8:00	Dinner Break			
8:00-10:00	Reception: Jepson Alumni Center			

Saturday

7:30	Registration Opens - Light Breakfast

Contributed Talks				
Time	**Session IIa** *Jepson 103*	**Session IIb** *Jepson 109*	**Session IIc** *Jepson 120*	**Session IId** *Jepson 106*
8:00-8:25	Cammey Cole	Boris P. Belinskiy	Hongwei Chen	Radu C. Cascaval
8:25-8:50	Sean Ellermeyer	Mary Ann Horn	Ratnasingham Shivaji	Dehua Wang
8:50-9:15	Eric R. Kaufmann	K. Renee Fister	Maya Chhetri	Joel Avrin
9:15-9:40	Seth F. Oppenheimer	Tom Gard	Mark E. Oxley	Stacey Chastain
9:40-10:05	Shree Y. Whitaker	Suzanne Sumner	Yudi Soeharyadi	Richard M. McLaughlin

10:05-10:35	Break
Time	*Jepson 118*
10:35-11:35	**Plenary Lecture:** Glenn Webb: "A Diffusion Model of Phenotype Evolution in *Helicobacter pylori* "
11:35-1:30	Lunch Break
Time	*Jepson 118*
1:30-2:30	**Plenary Lecture:** Peter Lax: "A Dispersive Deterministic Analogue of Turbulence"
2:30-3:00	Break

Contributed Talks				
Time	**Session IIIa** *Jepson 103*	**Session IIIb** *Jepson 109*	**Session IIIc** *Jepson 120*	**Session IIId** *Jepson 106*
3:00-3:25	Richard Noren	George A. Hagedorn	Scott Beeler	Russell Herman
3:25-3:50	Skip Thompson	Steven Jilcott	Friedemann Brock	'Kale Oyedeji
3:50-4:15	Relja Vulanovic	Lev Steinberg	Borislav Yordanov	Zachariah Sinkala
4:15-4:40	Ronald E. Mickens	Brian Smith	Siaka Kone	A. Chouikha
4:40-5:05	Edward Kwasi Boamah	Zdzislaw W. Trzaska	M. Qafsaoui	

5:05	Informal Discussion − Future Directions in DE Research
5:30	Conference Adjourns−Bye now!

Schedule of Contributed Talks

Session Ia

Chair: Mary Ann Horn
Jepson 103

4:30-4:55 Michael K.-H. Kiessling (Rutgers University)

Prescribing higher order curvature in conformal differential geometry

4:55-5:20 Dimiter Vassilev (Purdue University)

Regularity near the characteristic set in the non-linear Dirichlet problem and conformal geometry of sub-laplacians

5:20-5:45 Carl Lutzer (University of Kentucky)

A Partial Determination of $\partial\Omega$ by the High Energy Spectrum of the Dirichlet to Neumann Operator

5:45-6:10 Lizabeth Rachele (Tufts University)

Inverse Problems for Elastic Media

6:10-6:35 C. Maeve McCarthy (Murray State University)

On the Optimal Design of Tubular Structures

Session Ib

Chair: Renee Fister
Jepson 109

4:30-4:55 Rachel Belinsky (Morris Brown College)

Integrals of Legendre Polynomials and Solution of some Partial Differential Equations

4:55-5:20 Julian L. Xu (University of Texas at Brownsville)

A Unified Approach to Robust Performance of A Class of Transfer Functions with Multilinear Correlated Perturbations

5:20-5:45 Julian L. Xu (University of Texas at Brownsville)

Liapunov Stability of Spinning Spacecraft with Partially Liquid-Filled Cylindrical Tanks

5:45-6:10 Yuncheng You (University of South Florida)

TBA

6:10-6:35 Andriy Blazhievskiy (Technological University of Podillia)

Summation of Polyparametrical Functional Series by the Method of Finite Hybrid Integral Transforms (Hankel 1, Fourier)

Session Ic

Chair: Seth Oppenheimer
Jepson 107

4:30-4:55 Bhagat Singh (University of Wisconsin - Manitowoc)

Existence of Nonoscillatory Solutions for Nonlinear Integro-differential Equations of Second Order

4:55-5:20 Bo Zhang (Fayetteville State University)

Construction of Liapunov Functionals for Linear Volterra Integrodifferential Equations and Stability of Delay Systems

5:20-5:45 Youssef N. Raffoul (University of Dayton)

Asymptotic Stability In Linear Volterra Difference Equations

5:45-6:10 Christopher Winfield (Lamar University)

Further Analysis of the Lippmann-Schwinger Equation

6:10-6:35 John Davis (Baylor University)

Nonlinear Eigenvalue Problems Involving Two Classes of Functional Differential Equations

Session Id

Chair: Michael Kerckhove
Jepson 102

4:30-4:55 Dorina Mitrea (University of Missouri-Columbia)

The transmission problem for multilayered anisotropic elastic bodies with rough interfaces

4:55-5:20 Irina Mitrea (University of Minnesota)

On the spectra of elastostatic and hydrostatic layer potentials on curvilinear polygons.

5:20-5:45 Gieri Simonett (Vanderbilt University)

On Diffusion-Induced Grain-Boundary Motion

5:45-6:10 Robert Sims (Univ. Alabama at Birmingham)

Localization in one dimensional random media: A Scattering Theoretic Approach

6:10-6:35 E.Tsekanovskii (Niagara University)

On Spectral Functions of K.Friedrichs and M.Krein Boundary Value Problems

Session IIa

Chair: John Hubbard
Jepson 103

8:00-8:25 Cammey Cole (North Carolina State University)

A Mathematical Model for the Uptake and Elimination of Benzene in Animals

8:25-8:50 Sean Ellermeyer (Kennesaw State University)

Persistence criteria for a variable nutrient chemostat

8:50-9:15 Eric R. Kaufmann (University of Arkansas at Little Rock)

Smoothness of Solutions of Conjugate Boundary Value Problems

9:15-9:40 Seth F. Oppenheimer (Mississippi State University)

A model for the bioremediation of a river

9:40-10:05 Shree Y. Whitaker (North Carolina State University)

Development of a Multistate Biologically-Based Dose-Response Model for Developmental Toxicology

Session IIb

Chair: Maeve McCarthy
Jepson 109

8:00-8:25 Boris P. Belinskiy (University of Tennessee at Chattanooga)

Exact Controllability of a Hanging Cable

8:25-8:50 Mary Ann Horn (Vanderbilt University)

Boundary stabilization of a system of anisotropic elasticity with light internal damping

8:50-9:15 K. Renee Fister (Murray State University)

Optimal Control of Harvesting Coupled with Boundary Control in a Predator-Prey System

9:15-9:40 Tom Gard (University of Georgia)

Permanence in the Mean for Stochastic Population Models

9:40-10:05 Suzanne Sumner (Mary Washington College)

Hopf Bifurcation Surfaces in Pioneer-Climax Competing Species Models

Session IIc

Chair: John Baxley
Jepson 120

8:00-8:25 Hongwei Chen (Christopher Newport University)

Blow-up Estimates of Positive Solutions of a Reaction- Diffusion System

8:25-8:50 Ratnasingham Shivaji (Georgia Southern University & Mississippi State University)

Nonexistence of nonnegative solutions for a class of semilinear elliptic systems

8:50-9:15 Maya Chhetri (University of North Carolina at Greensboro)

Recent developments on semipositone systems

9:15-9:40 Mark E. Oxley (Air Force Institute of Technology)

Abstract Extinction Problems

9:40-10:05 Yudi Soeharyadi (The University of Memphis)

Regularity of solutions to the perturbed conservation laws

Session IId

Chair: James Reneke
Jepson 106

8:00-8:25 Radu C. Cascaval (University of Memphis)

Global Solutions for a Class of Dispersive Equations

8:25-8:50 Dehua Wang (University of Pittsburgh)

Global Solutions and Stability of Magnetohydrodynamics

8:50-9:15 Joel Avrin (University of North Carolina-Charlotte)

Spectral Decomposition Techniques For the Incompressible Navier-Stokes Equation

9:15-9:40 Stacey Chastain (University of Florida)

The Existence and Behavior of Singularities of Solutions to the Flow of H-Systems

9:40-10:05 Richard M. McLaughlin (UNC Chapel Hill)

Scalar Intermittency in Shear Models and the Rigorous Calculation of a PDF Tail

Session IIIa

Chair: Elizabeth Bradley
Jepson 103

3:00-3:25 Richard Noren (Old Dominion University)

Use of the Residual as an Error Estimator for Fredholm and Hammerstein Equations

3:25-3:50 Skip Thompson (Radford University)

Experiments With a Stiff ODE Solver for Stiff Systems of Delay Differential Equations

3:50-4:15 Relja Vulanovic (Kent State University Stark Campus)

Numerical Methods for Quasilinear Singular Perturbation Problems: Some Recent Results

4:15-4:40 Ronald E. Mickens (Clark Atlanta University)

A Nonstandard Finite Difference Scheme for A Strongly Nonlinear Duffing Equations

4:40-5:05 Edward Kwasi Boamah (University of the Witwatersrand, Johannesburg)

Computational Inverse Eigenvalue Problem

Session IIIb

Chair: Joel Avrin
Jepson 109

3:00-3:25 George A. Hagedorn (Virginia Tech)

A New, Exponentially Accurate Semiclassical Approximation

3:25-3:50 Steven Jilcott (Virginia Tech)

Time-Dependent Perturbation and the Born-Oppenheimer Approximation

3:50-4:15 Lev Steinberg (University of Puerto Rico at Mayaguez)

Mesoscopic Resonance of Self-excited Defect Oscillations

4:15-4:40 Brian Smith (Univ. Alabama at Birmingham)

On the connectedness of the space of initial data for the Einstein equations

4:40-5:05 Zdzislaw W. Trzaska (Warsaw University of Technology)

System of difference equations involved by the Sierpinski gasket

Session IIIc

Chair: Mark Oxley
Jepson 120

3:00-3:25 Scott Beeler (North Carolina State University)

Use of a reduced order surface kinetics model and p-polarized reflectance measurements for representation of GaP formation

3:25-3:50 Friedemann Brock (University of Missouri-Columbia)

Continuous rearrangement and symmetry of solutions of BVP's

3:50-4:15 Borislav Yordanov (UW-Milwaukee)

On the critical exponent for a dissipative semilinear wave equation

4:15-4:40 Siaka Kone (University of the Witwatersrand, Johannesburg)

Mixed order systems of ordinary linear Differential Equations

4:40-5:05 M. Qafsaoui (lamfa - universit de picardie - france)

Equivalence between regularity theorems and heat kernel estimates for higher order elliptic operators under divergence form.

Session IIId

Chair: Jeff Borggaard
Jepson 106

3:00-3:25 Russell Herman (UNC Wilmington)

Symbolic Computation of the Lie Point Symmetries of the Vaidya Equation

3:25-3:50 'Kale Oyedeji (Morehouse College)

An Averaging Method for a "Truly" Nonlinear Class of Oscillator ODE's*

3:50-4:15 Zachariah Sinkala (Middle Tennessee State University)

Periodic solutions of nonlinear wave equations when the ratio of the period to the length of the interval is irrational

4:15-4:40 A. Chouikha (University of Paris-Nord)

Periodic solutions of non homogeneous differential equations