Twentieth Annual
Southeastern-Atlantic Regional Conference on
Differential Equations

Virginia Tech, 20-21 October, 2000

Friday				
Time	*Donaldson Brown Hotel (CEC)*			
1:30– 2:00	Registration Opens			
Contributed Talks				
Time	**Session Ia**	**Session Ib**	**Session Ic**	**Session Id**
	Room A	*Alumni Room*	*Room F*	*Executive Room*
2:00– 2:20	R.L. Herman	D. Hinton	M. Chhetri	C. Zeng
2:25– 2:45	B.P. Belinskiy	K.J. Haertzen	R. Shivaji	R. Weikard
2:50– 3:10	P.F. Dostert	L. Battle	A. Stefanov	A. Savu
3:10– 4:00	Break			
4:00– 5:00	**Plenary Lecture:** Jerry Bona "Mathematics and Beach Protection"			

Saturday				
Time	*Norris Hall*			
8:00– 8:30	Registration Opens			
Contributed Talks				
Time	**Session IIa**	**Session IIb**	**Session IIc**	**Session IId**
	Norris 200	*Norris 204*	*Norris 205*	*Norris 207*
8:30– 8:50	H.R. Joshi	R. Fabiano	A.L. Mazzucato	D.C. Carothers
8:55– 9:15	K.R. Fister	R. Vedantham	C. Cao	M.A. Shubov
9:20– 9:40	C.M. McCarthy	J.R. Gruendler	J. Avrin	M. Stanislavova
9:45–10:05	J. Shi	D.Y. Gao	V.I. Shubov	K. Ghanbari
10:10–10:30	K. Howard	T. Khan		T. Dankel
10:30–11:00	Break			
11:00–12:00	**Plenary Lecture:** Eric Carlen "Variational Problems in the Wasserstein metric and Kinteic Theory"			
12:00– 2:00	Lunch Break			
2:00– 3:00	**Plenary Lecture:** James Glimm "Asymptotic Analysis of Fluid Mixing Equations in the Incompressible Limit"			
3:00– 3:30	Break			
Contributed Talks				
Time	**Session IIIa**	**Session IIIb**	**Session IIIc**	**Session IIId**
	Norris 200	*Norris 204*	*Norris 205*	*Norris 207*
3:30– 3:50	J.F. Selgrade	H.K. Lee	H. Warchall	J.R. Graef
3:55– 4:15	S.F. Oppenheimer	R. Acar	G.A. Hagedorn	Y.N. Raffoul
4:20– 4:40	T.C. Gard	L.F. Caudill, Jr.	J. Toloza	M. Bartušek
4:45– 5:05	R.L. Diaz	M.N. Islam	V. Alexiades	Suzanne Lenhart
5:05– 5:30	Discussion - Future Directions in DE Research			
5:30– 2001	Conference Adjourns			

Schedule of Contributed Talks

Session Ia

Chair: Rich Fabiano
Room A

2:00–2:25 Russell L. Herman (University of North Carolina at Wilmington)
Dynamics, Resonances, and Librational Surfaces of Nonspherical Satellites

2:25–2:50 Boris P. Belinskiy (University of Tennessee at Chattanooga)
Oscillations of a Rotating String with a Random Frequency

2:50–3:15 Paul F. Dostert (James Madison University & Texas A&M University)
Numerical Approximations of Large Amplitude Suspension Bridge Oscillations

Session Ib

Chair: Terry Herdman
Alumni Room

2:00–2:25 Don Hinton (University of Tennessee)
Positive Eigenvalues of Second Order BVP's and a Theorem of M. G. Krein

2:25–2:50 Kevin J. Haertzen (Northern Illinois University)
Geometric Aspects of Sturm-Liouville Problems Space of Boundary Conditions for Left-Definiteness

2:50–3:15 Laurie Battle (University of Tennessee)
Maximum of Green's Functions for the Sturm-Liouville Problem

Session Ic

Chair: David Gao
Room F

2:00–2:25 Maya Chhetri (The University of North Carolina at Greensboro)
On Positive Solutions for Classes of p-Laplacian Semipositone Systems

2:25–2:50 Ratnasigham Shivaji (Mississippi State University)
An Existence Result for a Class of p-Laplacian Equations

2:50–3:15 Atanas Stefanov (University of Massachusetts)
Optimal Solvability for the Dirichlet and Neumann Problems in Dimension Two

Session Id

Chair: George Hagedorn
Executive Conference Room

2:00–2:25 Chongchun Zeng (University of Virginia)
Hamiltonian ODEs and PDEs Under Strong Constraints

2:25–2:50 Rudi Weikard (University of Alabama at Birmingham)
Commuting Differential Operators and Integrable Systems

2:50–3:15 Anamaria Savu (University of Toronto)
The Kowalevski Top Described as a Hamiltonian System on $sp(4)^*$

Session IIa

Chair: Suzanne Lenhart
Norris 200

8:30–8:55 Hem Raj Joshi (University of Tennessee)
Optimal Control of an HIV Immunology Model

8:55–9:20 K. Renee Fister (Murray State University)
Optimal Control Applied to Cell-Kill Strategies

9:20–9:45 C. Maeve McCarthy (Murray State University)
Optimal Control of a Chemotactic System

9:45–10:10 Junping Shi (College of William and Mary)
Sharp Layer Solutions and Secondary Bifurcations

10:10–10:35 Keith Howard (Kenyon College)
A Model of Cell Dwarfism

Session IIb

Chair: Belinda King
Norris 204

8:30–8:55 Rich Fabiano (University of North Carolina at Greensboro)
Renorming Results for Stability of Functional Differential Equations

8:55–9:20 Ram Vedantham (University of North Carolina at Wilmington)
Optimal Control of Viscous Nonlinear Burgers' Equation

9:20–9:45 Joseph R. Gruendler (North Carolina A&T State University)
Chaos in Partial Differential Equations Chaotic Oscillations of a Buckled Elastic Beam

9:45–10:10 David Yang Gao (Virginia Tech)
A New Phenomenon in Nonconvex Dynamical Systems and Canonical Dual Control Against Chaos

10:10–10:35 Taufiquar Khan (Clemson University)
Modeling of the ACTEX Structure with Active Materials

Session IIc

Chair: Hyesuk K. Lee
Norris 205

8:30–8:55 Anna L. Mazzucato (Yale University)
"Mild" Solutions to the Navier-Stokes Equation

8:55–9:20 Chongsheng Cao (Los Alamos National Laboratory)
Global Attractor for a Planetary Geostrophic Viscous Model

9:20–9:45 Joel Avrin (University of North Carolina at Charlotte)
Large-Parameter Global Regularity and Attractor Results for the Incompressible Navier-Stokes Equations

9:45–10:10 Victor I Shubov (Texas Tech University)
Stability of Airflow Containing Fine Dust and Applications to Tornado Dynamics

Session IId

Chair: Lester F. Caudill, Jr.
Norris 207

8:30–8:55 David C. Carothers (James Madison University)
Some Results on Systems of Polynomial Differential Equations and Projectively Polynomial Functions

8:55–9:20 Marianna A. Shubov (Texas Tech University)
Spectral and Asymptotic Analysis of an Aircraft Wing Model

9:20–9:45 Milena Stanislavova (University of Massachusetts)
Spectral Mapping Theorem for the Linearized 2D-Euler Equation

9:45–10:10 K. Ghanbari (Carleton University)
A Note on an Inverse Generalized Eigenvalue Problem

10:10–10:35 Thad Dankel (University of North Carolina at Wilmington)
On Large Space-Time Asymptotics of Solutions to Random Burgers-like Equations Driven by White Noise

Session IIIa

Chair: Renee Fister
Norris 200

3:30–3:55 James F. Selgrade (North Carolina State University)
Nonequilibrium Behavior in Discrete, Selection-Migration Models with Density-Dependent Selection

3:55–4:20 Seth F. Oppenheimer (Mississippi State University)
An Age Structured Insect Model

4:20–4:45 Thomas C. Gard (University of Georgia)
A New Liapunov Function for the Simple Chemostat

4:45–5:10 Ricardo L. Diaz (University of Northern Colorado)
An Application of the Multivariable Hopf-Cole Transformation

Session IIIb

Chair: Jeff Borggaard
Norris 204

3:30–3:55 Hyesuk K. Lee (Clemson University)
Domain Decomposition Methods Based on Optimization

3:55–4:20 Robert Acar (University of Puerto Rico)
Graduated Non-Convexity Type Algorithms for Image Segmentation

4:20–4:45 Lester F. Caudill, Jr. (University of Richmond)
Model for Crack Detection by Thermal Methods

4:45–5:10 Muhammad N. Islam (University of Dayton)
Stability of Perturbed Volterra Equations

Session IIIc

Chair: Rudi Weikard
Norris 205

3:30–3:55 Henry Warchall (National Science Foundation)
Spectral Stability of Encapsulated-Vortex Solutions to Nonlinear Schrödinger Equations

3:55–4:20 George A. Hagedorn (Virginia Tech)
An Exponentially Accurate Time–Dependent Born–Oppenheimer Approximation

4:20–4:45 Julio Toloza (Virginia Tech)
Exponentially Accurate Error Estimates of Quasiclassical Eigenvalues

4:45–5:10 Vasilios Alexiades (University of Tennessee)
Gas Hydrates in Seafloor Sediments

Session IIId

Chair: Taufiquar Khan
Norris 207

3:30–3:55 John R. Graef (University of Tennessee at Chattanooga)
Some Results on the Asymptotic Decay of Nonoscillatory Solutions of General Nonlinear Difference Equations

3:55–4:20 Youssef N. Raffoul (University of Dayton)
Uniform Asymptotic Stability In Linear Volterra Difference Equations

4:20–4:45 Miroslav Bartušek (Masaryk University)
On Existence of Black Hole Solutions

4:45–5:10 Suzanne Lenhart (University of Tennessee)
Optimal Control of the Obstacle in a Parabolic Variational Inequality