Program of the Sessions

Atlanta, Georgia, March 8–10, 2002

Friday, March 8

Meeting Registration

8:00 AM – 4:30 PM **Atrium, Instructional Center**

Short Course on Cryptology: Mathematics, Craft, and Implementation

8:30 AM – 11:30 AM **Location To Be Announced**

Presenter: **Thomas H. Barr**, Rhodes College

Short Course on An Introduction to the Mathematics of Biology

8:30 AM – 11:30 AM **Location To Be Announced**

Presenters: **Edward Yeargers**, Georgia Institute of Technology (Biology)
Ronald W. Shonkwiler, Georgia Institute of Technology
James Herod, Georgia Institute of Technology

Short Course on Optimal Use of Technology inTeaching Geometry at the College-University Level

8:30 AM – 11:30 AM **Location To Be Announced**

Presenter: **Subhash C. Saxena**, Coastal Carolina University

Short Course on Teaching Mathematics from Afar

8:30 AM – 11:30 AM **Location To Be Announced**

Presenter: **Linda H. Boyd**, Georgia Perimeter College

T.A. Rush

11:30 AM – 1:00 PM **Room 249, Skiles Classroom Building**

Exhibits and Book Sales

NOON – 4:30 PM **Atrium, Instructional Center**

Invited Address

1:00 PM – 1:55 PM **Auditorium, Ferst Center for the Arts**

1:00PM Introductory and Welcoming Remarks
(1) *De-prescribing the shape of surfaces.*
Robert L. Bryant, Duke University (975-53-06)

Special Session on Banach Spaces and Their Applications, I

2:10 PM – 5:30 PM **Room 117, Instructional Center**

Organizers: **Peter G. Casazza**, University of Missouri-Columbia
N. J. Kalton, University of Missouri-Columbia

2:10PM (2) *The Banach envelope of Paley-Wiener type spaces.*
Mark R Hoffmann, University of Missouri-Columbia (975-46-26)

2:40PM (3) *A property of strictly singular 1-1 operators.*
George Androulakis*, University of South Carolina, and **Per Enflo**, Kent State University (975-46-284)

3:10PM (4) *Semi-Transitive Operator Algebras.* Preliminary report.
Haskell Rosenthal* and **Vladimir Troitsky**, University of Texas at Austin, Austin, TX (975-46-247)

3:40PM (5) *Copies of ℓ^p in non-commutative L^p-spaces.*
Narcisse Randrianantoanina, Miami University (975-46-196)

4:10PM (6) *Greedy Approximations in Hilbert spaces.*
Preliminary report.
Vladimir N Temlyakov, University of South Carolina (975-41-207)

The time limit for each contributed paper in the sessions is ten minutes. In the Special Sessions the time limit varies from session to session and within sessions. To maintain the schedule, time limits will be strictly enforced.
For papers with more than one author, an asterisk follows the name of the author who plans to present the paper at the meeting.
Papers flagged with a solid triangle (►) have been designated by the author as being of possible interest to undergraduate students.
Abstracts of papers presented in the sessions at this meeting will be found in Volume 23, Issue 2 of *Abstracts of papers presented to the American Mathematical Society*, ordered according to the numbers in parentheses following the listings. The middle two digits, e.g., 897-**20**-1136, refer to the Mathematical Reviews subject classification assigned by the individual author. Groups of papers for each subject are listed chronologically in the *Abstracts*. The last one to four digits, e.g., 897-20-**1136**, refer to the receipt number of the abstract; abstracts are further sorted by the receipt number within each classification.

4:40PM (7) *Convergence of some greedy algorithms in Banach spaces.*
S J Dilworth*, University of South Carolina, **Denka Kutzarova**, Bulgarian Academy of Sciences, and **V N Temlyakov**, University of South Carolina (975-46-224)

5:10PM (8) *A conditional quasi-greedy basis of l_1.*
Stephen J Dilworth, University of South Carolina, and **David S Mitra***, University of Texas at Austin (975-46-20)

Special Session on Knot Theory, 3-Manifolds, 4-Manifolds, and Geometric Group Theory, I

2:10 PM – 5:30 PM **Room 213, Instructional Center**

Organizers: **Wolfgang H. Heil**, Florida State University
Jose Carlos Gómez-Larrañaga, CIMAT, Mexico

2:10PM (9) *Constructing and classifying tight contact structures.*
Ko J Honda, USC, **William H. Kazez*** and **Gordana Matic**, UGA (975-57-123)

2:40PM ► (10) *Chord Diagrams and Coxeter Links.* Preliminary report.
Eriko Hironaka, Florida State University (975-57-236)

3:10PM (11) *Linking of Minimal Sets in Lorenz Systems.*
Michael C Sullivan*, Southern Illinois University at Carbondale, and **Alex Clark**, University of North Texas (975-37-28)

3:40PM (12) *Wild knots as limit sets of Kleinian Groups.*
Gabriela Hinojosa, IM-UNAM (975-57-163)

4:10PM (13) *Classifying contact structures.*
Ko Honda, University of Southern California, **Will Kazez** and **Gordana Matic***, University of Georgia (975-57-273)

4:40PM ► (14) *Shape complexes in robotics.* Preliminary report.
Robert Ghrist*, Georgia Tech, and **Aaron Abrams**, University of Georgia (975-57-303)

5:10PM (15) *The Lawrence-Krammer representation is unitary.*
Ryan D Budney, Cornell University (975-57-184)

Special Session on Harmonic Analysis, I

2:10 PM – 5:45 PM **Room 209, Instructional Center**

Organizers: **Gerd Mockenhaupt**, Georgia Institute of Technology
Michael T. Lacy, Georgia Institute of Technology
Akos Magyar, University of Georgia

2:10PM (16) *Ergodic Ramsey Theory and Harmonic Analysis.*
Vitaly Bergelson, Ohio State University (975-28-330)

2:55PM (17) *Hardy fields and arithmetic averages on the integers.*
Michael Boshernitzan, Rice University, **Anthony Quas** and **Máté Wierdl***, University of Memphis (975-42-49)

3:30PM (18) *Analysis on manifolds with boundary.* Preliminary report.
Christopher D Sogge, Johns Hopkins University (975-42-183)

4:05PM Discussion

(19) *On $L^p \to L^{p'}$ estimates on Fourier integral operators near caustics.* Preliminary report.
Andrew Comech, UNC at Chapel Hill (975-35-121)

4:40PM (20) *Estimates for maximal singular integrals.* Preliminary report.
Loukas Grafakos, University of Missouri (975-42-294)

5:15PM (21) *The complete (L^p, L^p) mapping problem for oscillatory integrals in higher dimension.* Preliminary report.
Gary Sampson*, Auburn University, and **Pawel Szeptycki**, University of Kansas (975-42-42)

Special Session on Technology and Distance Learning, I

2:10 PM – 4:30 PM **Room 149, Skiles Classroom Building**

Organizers: **Tom Morley**, Georgia Institute of Technology
Martha Abel, Georgia Southern University

2:10PM ► (22) *Digital Camera Meets Geometer's Sketchpad.*
Judy S O'Neal, North GA College & State University (975-26-56)

2:40PM ► (23) *The MAA's Mathematical Sciences Digital Library: A Progress Report.*
Doug Ensley, Shippensburg University (975-00-194)

3:10PM ► (24) *Using Multimedia to Motivate Student Learning of Programming.*
Mark Guzdial, Georgia Tech (975-97-295)

3:40PM ► (25) *Make the Most of Your Time with Students! Use Demos with Positive Impact!*
Lila F Roberts*, Georgia Southern University, and **David R Hill**, Temple University (975-97-261)

4:10PM Discussion

Special Session on Graphs and Matroids, I

2:10 PM – 5:30 PM **Room 205, Instructional Center**

Organizers: **James G. Oxley**, Louisiana State University
Bogdan Oporowski, Louisiana State University
Robin Thomas, Georgia Institute of Technology

2:10PM ► (26) *Hamilton paths in toroidal graphs.*
Robin Thomas, **Xingxing Yu***, Georgia Tech, and **Wenan Zang**, University of Hong Kong (975-05-255)

2:40PM (27) *Spanning 2-trails from degree sum conditions.*
Mark N. Ellingham*, Vanderbilt University, **Xiaoya Zha**, Middle Tennessee State University, and **Yi Zhang**, Tillinghast–Towers Perrin (975-05-320)

3:10PM (28) *Connected Spanning Subgraph in Surface.*
Ken-ichi Kawarabayashi, Vanderbilt University (975-05-313)

3:40PM (29) *Various Chromatic Numbers of an Oriented Matroid.* Preliminary report.
Laura Chavez-Lomeli and **Luis A Goddyn***, Simon Fraser University (975-05-414)

4:10PM ► (30) *Potts Models, Chromatic Polynomials, and All That.*
Alan D. Sokal, New York University (975-05-152)

4:40PM (31) *Electrical network theory generalized to matroids.*
David G. Wagner, University of Waterloo (975-05-321)

5:10PM (32) *Tutte Polynomials of Generalized Parallel Connections.*
Joseph E Bonin*, The George Washington University, and **Anna de Mier**, Universitat Politècnica de Catalunya (975-05-23)

Special Session on Numerical Linear Algebra and Its Applications, I

2:10 PM – 5:30 PM **Room 115, Instructional Center**

Organizers: **Michele Benzi**, Emory University
Steven B. Damelin, Georgia Southern University
James Nagy, Emory University

2:10PM (33) *Kronecker Products in Image Restoration.* Preliminary report.
James G Nagy, Emory University (975-65-08)

2:40PM (34) *On Freud equations and Jacobi Matrices associated with orthogonal polynomials for entire weights of faster than smooth polynomial decay at infinity.*
Steven B Damelin, Georgia Southern University (975-15-75)

3:10PM (35) *An iterative method for generalized KKT systems.*
Michele Benzi*, Emory University, and **Gene H Golub**, Stanford University (975-65-50)

3:40PM (36) *Computing Smooth Decompositions.*
Luca Dieci, Mathematics, Georgia Tech (975-65-200)

4:10PM (37) *A More Stable Superfast Toeplitz Solver.*
Michael A. Stewart, Georgia State University (975-15-286)

4:40PM (38) *A Superfast Algorithm for Checking Stability of Matrix Polynomials.* Preliminary report.
Vadim Olshevsky, Georgia State University (975-65-73)

5:10PM ► (39) *Some Characterization Results for a Linear Operator of Special Block Structure Containing a Nilpotent Matrix.* Preliminary report.
Donald W Fausett* and **Kanuri N Murty**, Georgia Southern University (975-15-323)

Special Session on Frames, Wavelets, and Operator Theory, I

2:10 PM – 5:30 PM **Room 211, Instructional Center**

Organizers: **Christopher E. Heil**, Georgia Institute of Technology
Yang Wang, Georgia Institute of Technology

2:10PM (40) *Uniform Tight Frames with Erasures.*
Peter G Casazza*, University of Missouri, and **Jelena Kovacevic**, Bell Labs (975-42-46)

2:40PM (41) *Subspace Gabor Frames and the Balian-Low Phenomenon.* Preliminary report.
Deguang Han, University of Central Florida (975-46-92)

3:10PM (42) *Prelude to a Formal Theory of Frame Redundancy.* Preliminary report.
Radu V Balan*, Siemens Corporate Research, and **Zeph Landau**, University of California at Berkeley (975-40-178)

3:40PM (43) *Quasi-affine frames for rational expansive dilations.*
Marcin Bownik, University of Michigan (975-42-167)

4:10PM (44) *MRA Tight M-Wavelet Frames and Pairs of Univariate Dual Wavelet Frames.* Preliminary report.
Bin Han, University of Alberta (975-42-131)

4:40PM (45) *Behaviour of Shift Invariant Spaces under Dilation.* Preliminary report.
Edward N. Wilson, Washington University in St. Louis (975-42-252)

5:10PM ► (46) *Some properties of Shift Invariant Spaces with Refinable Generators.* Preliminary report.
Carlos A. Cabrelli* and **Ursula M. Molter**, University of Buenos Aires (975-41-134)

Special Session on Elementary Mathematical Modeling, I

2:10 PM – 4:00 PM **Tennebaum Auditorium, Instructional Center**

Organizer: **Mary Ellen Davis**, Georgia Perimeter College

2:10PM ► (47) *Math Modeling for the Liberal Arts.*
Cathy W Carter, Christian Brothers University (975-97-405)

2:40PM (48) *Can Elementary Modeling be a True Alternative to Algebra?*
Cindy S. Henning, Columbus State University (975-97-350)

3:10PM ► (49) *Reflections About the Axes of Student Majors in Elementary Mathematical Modeling.*
Ray E. Collings, Georgia Perimeter College (975-00-368)

3:40PM ► (50) *Math of Morphing: Teaching Topology to Liberal Arts Students.* Preliminary report.
Paul Lawrence Baker, Catawba College (975-54-127)

Special Session on Collaborative Learning Classroom Activities

2:10 PM – 4:30 PM **Room 107, Instructional Center**

Organizer: **Sabrina A. Hessinger**, Armstrong Atlantic State University

2:10PM Discussion

2:40PM (51) *Pre-Calculus Student Experimentation with Polynomial and Rational Functions.* Preliminary report.
Carolyn A. Yackel, Mercer University (975-97-304)

3:10PM ► (52) *Group Exams: Collaborative Learning in a Proofs-Based Course.* Preliminary report.
James N. Brawner, Armstrong Atlantic State University (975-97-392)

3:40PM ► (53) *Cooperative Learning Projects for Calculus.* Preliminary report.
Sabrina A Hessinger, Armstrong Atlantic State University (975-97-396)

4:10PM Discussion

Special Session on Linear Algebra and Matrix Theory, I

2:10 PM – 5:30 PM **Room 119, Instructional Center**

Organizers: **Frank J. Hall**, Georgia State University
Zhongshan Li, Georgia State University

2:10PM (54) *The number of unitary similarity classes among a congruence class with fixed spectrum.*
Charlies R Johnson, The College of William and Mary (975-15-43)

2:40PM ► (55) *Positive eigenvalues and two-letter generalized words.*
Christopher Hillar, UC Berkeley, **Charles R Johnson** and **Ilya M Spitkovsky***, College of William & Mary (975-15-18)

3:10PM (56) *Generalizaton of Ky Fan-Amir-Moéz-Horn-Mirsky's result on the eigenvalues and real singular values of a matrix.* Preliminary report.
Tin-Yau Tam* and **Wen Yan**, Auburn University (975-15-57)

3:40PM (57) *Spectrally Stable Matrices.*
Sivaram K Narayan, Central Michigan University (975-15-328)

4:10PM (58) *Extensions of Positive Definite Functions on Ordered Groups.*
Mihaly Bakonyi, Georgia State University (975-47-112)

4:40PM (59) *Some Inequalities on $A \times B$ for Classical Groups.*
Hongyu He, Georgia State University (975-15-53)

5:10PM (60) *Some results in the theory of g-inverses over rings.*
Bhaskara Rao P Kopparty, Southwestern College (975-15-21)

Special Session on Mathematical Models in Biology, I

2:10 PM – 5:30 PM **Room 215, Instructional Center**

Organizer: **Robert D. Fray**, Furman University

2:10PM ► (61) *Interdisciplinary Lively Applications Projects Using Biology.*
William P. Fox, Francis Marion University (975-34-141)

2:40PM ► (62) *A host-parasite relationship with a lethal host.* Preliminary report.
Patricia B Humphrey* and **James P Braselton**, Georgia Southern University (975-92-225)

3:10PM ► (63) *Optimal Control of the Black Bear Population in the Southern Appalachians. Preliminary Report.* Preliminary report.
Rene A. Salinas, University of Tennessee (975-92-301)

3:40PM ► (64) *A Fishy Problem that Requires Technology.*
Rich West, Francis Marion University (975-92-204)

4:10PM ► (65) *A model for* Pseudo-nitzschia multiseries*, a toxic algae species.* Preliminary report.
Maria Siopsis, University of Tennessee (975-92-201)

4:40PM (66) *Discrete-Time Models for Periodic Diseases.*
Ronald E. Mickens, Clark Atlanta University (975-92-68)

5:10PM ► (67) *Inference for planar mean bioshapes.*
Vic Patrangenaru, Georgia State University (975-62-27)

Special Session on Symplectic and Contact Topology, I

2:10 PM – 5:30 PM **Room 217, Instructional Center**

Organizers: **Margaret Symington**, Georgia Institute of Technology
Gordana Matic, University of Georgia

2:10PM (68) *A Morse-Bott approach to contact homology.*
Frédéric Bourgeois, Stanford University (975-53-117)

2:40PM (69) *On symplectic fillings of lens spaces.* Preliminary report.
Paolo Lisca, University of Pisa, Italy and University of Georgia, GA, USA (975-57-177)

3:10PM (70) *Stein fillings of a contact 3-manifold.* Preliminary report.
Rostislav Matveyev, Dept. of Math., UC Davis (975-57-257)

3:40PM (71) *Nonisotopic symplectic tori in the fiber class of elliptic surfaces.*
Stefano Vidussi, Kansas State University (975-57-215)

4:40PM (72) *Symplectic Topology of $S^2\times$ Surface".*
Joseph L Coffey, SUNY Stony Brook (975-53-228)

5:10PM (73) *Relative Contact Homology and Contact Non-squeezing.* Preliminary report.
Sang Seon Kim, Institute for Advanced Study (975-53-192)

Special Session on Number Theory, I

2:10 PM – 5:30 PM **Room 105, Instructional Center**

Organizer: **David Penniston**, Furman University

2:10PM (74) *q,t Analogues of Catalan Numbers and Parking Functions.* Preliminary report.
Jim Haglund, Univ. of Pennsylvania (975-11-220)

2:40PM ► (75) *Arithmetic of Borcherds Exponents.*
Ken Ono, University of Wisconsin at Madison (975-11-175)

3:10PM (76) *Canonical heights over abelian extensions.*
Matthew H Baker, Harvard University (975-11-258)

3:40PM ► (77) *Cauchy-Mirimanoff polynomials.* Preliminary report.
Pavlos Tzermias, University of Tennessee (975-11-407)

4:10PM (78) *The summatory function of the Mobius function.*
N. C. Ng, Institute for Advanced Study/University of Georgia (975-11-316)

4:40PM (79) *Mordell-Weil ranks of twists of pairs of elliptic curves.*
Gwynneth G Coogan*, University of Wisconsin, Madison, and **Jorge Jimenez-Urroz**, Universidad Autonoma De Madrid (975-11-229)

5:10PM (80) *Exceptional congruences for the coefficients of eta-product newforms.*
Matthew G. Boylan, University of Wisconsin at Madison (975-11-327)

Special Session on Automated Reasoning in Mathematics and Logic, I

2:10 PM – 5:30 PM **Room 240, Skiles Classroom Building**

Organizer: **Johan G. F. Belinfante**, Georgia Institute of Technology

2:10PM ► (81) *Machines Reasoning about Machines.*
J Strother Moore, University of Texas at Austin (975-68-85)

2:40PM (82) *The Method of Proof Sketches.*
Robert L Veroff, University of New Mexico (975-68-95)

3:10PM ► (83) *A Spectrum of Applications of Automated Reasoning.*
Larry Wos, Argonne National Laboratory (975-03-84)

3:40PM (84) *Extending Decision Procedures with Induction Schemes.*
Deepak Kapur, University of New Mexico (975-68-97)

4:10PM (85) *A logical framework for computer-verified proofs in undergraduate mathematics.*
Richard Sommer, Stanford University (975-03-133)

4:40PM (86) *The Comprehension Schema in Tableaux: Toward Wos' Eighth Research Problem.*
Benjamin Price Shults, Western Carolina University (975-03-91)

5:10PM (87) *Automated Reasoning about the Zermelo-von Neumann Cumulative Hierarchy.*
Johan G. F. Belinfante, Georgia Inst. Technology (975-03-83)

Special Session on Algebraic Combinatorics, I

2:10 PM – 4:30 PM **Room 243, Skiles Classroom Building**

Organizer: **Mihai A. Ciucu**, Georgia Institute of Technology

2:10PM ► (88) *The Laurent phenomenon.*
Sergey Fomin*, University of Michigan, and **Andrei Zelevinsky**, Northeastern University (975-05-334)

2:40PM (89) *Enumeration of ad-nilpotent $\mathfrak{b}$-ideals for simple Lie algebras.*
George E. Andrews, Department of Mathematics, The Pennsylvania State University, **Christian Krattenthaler***, Institut für Mathematik, Universität Wien, **Luigi Orsina** and **Paolo Papi**, Dipartimento di Matematica, Istituto G. Castelnuovo, Università di Roma "La Sapienza" (975-05-221)

3:10PM (90) *Generalizing Rota's basis conjecture to Young diagrams.* Preliminary report.
Timothy Y Chow*, Tellabs Research Center, and **C Kenneth Fan**, Cambridge, MA (975-05-143)

3:40PM ► (91) *Symmetry and Unimodality in t-stack sortable permutations.*
Miklos Bona, University of Florida (975-05-120)

4:10PM (92) *XYX algebras.*
Alexander Postnikov, M.I.T. (975-05-331)

Special Session on Real World Applications of Mathematics, I

2:10 PM – 4:30 PM **Room 246, Skiles Classroom Building**

Organizer: **Mark C. Ginn**, Appalachian State University

2:10PM ► (93) *Evaluating Hazardous Materials Regulations for New York City Tunnels.*
Charles R. Hadlock, Bentley College (975-91-172)

2:40PM ► (94) *Using Trigonometry and Physics to analyze the dangers of Bridge Swinging.*
Thomas L Fitzkee, Francis Marion University (975-51-244)

3:10PM (95) *College Algebra in Context: An Algebra Course Based on Real World Applications and Models.*
Lisa S Yocco*, Georgia Southern University, and **Ronald J Harshbarger**, University of South Carolina Beaufort (975-00-30)

3:40PM ► (96) *SVD Noise Reduction in Biomedical Imaging.*
Todd G. Will, Davidson College (975-15-388)

4:10PM ► (97) *Dual Career of Teaching and Consulting.*
James C. Kropa, Southern Polytechnic State Univ. (975-00-87)

Special Session on Research on the Mathematical Education of Undergraduates, I

2:10 PM – 4:00 PM **Room 207, Instructional Center**

Organizer: **Joe Wimbish**, Huntingdon College

2:10PM ► (98) *Enhancing Mathematics Courses through Engineering Applications.* Preliminary report.
Neil P Sigmon*, High Point University, and **Gregory Alan Gibson**, North Carolina A&T State (975-97-404)

2:40PM ► (99) *Nurturing Undergraduate Mathematics Majors at HBCUs.* Preliminary report.
Janis Oldham* and **Robert C Mers**, North Carolina A&T State University (975-97-402)

3:10PM ► (100) *Supplemental Instruction for Enhancement of Student's Capacity and Retention.* Preliminary report.
Zephyrinus C. Okonkwo* and **Barbara D. Holmes**, Albany State University (975-97-214)

3:40PM ► (101) *Misconceptions in Probability and Statistics: An Investigation of High School Students.*
Rhonda C Porter, Florida A. & M. University (975-97-52)

Special Session on Introductory/Elementary Statistics

2:10 PM – 4:00 PM **Room 111, Instructional Center**

Organizer: **Patricia G. Monroe**, Greenville Technical College

2:10PM ► (102) *Introducing Experimental Design and the Analysis of Variance – A Collaborative Learning Activity.*
Cheryl B. Hawkins, Greenville Technical College (975-97-383)

3:10PM ► (103) *The Evolution of Correlation Coefficients: Part III.*
Mike Perry, Appalachian State University (975-62-348)

3:40PM ► (104) *The Evolution of Correlation Coefficients: Part I.*
Gary D. Kader, Appalachian State University (975-62-346)

Special Session on Probability and Combinatorics, I

2:10 PM – 5:25 PM **Room 113, Instructional Center**

Organizers: **Russell D. Lyons**, Georgia Institute of Technology
Prasad V. Tetali, Georgia Institute of Technology

2:10PM (105) *Perfect matchings in random graphs with prescribed minimal degree.* Preliminary report.
Alan M Frieze*, Carnegie Mellon University, and **Boris G Pittel**, Ohio State University (975-60-144)

3:10PM (106) *Pseudo-random graphs.*
Michael Krivelevich, Tel Aviv University (975-05-216)

4:10PM (107) *On Avoiding A Giant Component.*
Tom Bohman*, **Alan Frieze**, Carnegie Mellon University, and **Nicholas Wormald**, University of Melbourne (975-05-332)

4:40PM (108) *Divide and Conquer Martingales.* Preliminary report.
Van H. Vu, Department of Mathmatics, UCSD (975-05-126)

Session for Contributed Papers on Mathematics Education

2:10 PM – 4:05 PM **Room 140, Skiles Classroom Building**

2:10PM ► (109) *The Ideas of Evariste Galois: Recovering Motivation in Abstract Algebra.* Preliminary report.
Matt D Lunsford, Union University (975-12-13)

2:25PM ► (110) *Ability in Mathematics as an Indicator of Success in Biology.* Preliminary report.
Rebecca C Dunn* and **Paula G Young**, Salem College (975-92-60)

2:40PM ► (111) *Using Special Relativity to introduce Infinite Products.*
James B Whitenton, Southern Polytechnic State University (975-97-61)

2:55PM ► (112) *The Fishbowl Discussion Technique - In a Math Class??*
Mike Pinter, Belmont University (975-97-232)

3:10PM ► (113) *Implementing Growth Models on a Spreadsheet.*
Deane E. Arganbright, University of Tennessee at Martin (975-97-300)

3:25PM (114) *CBMS, Preparation of Middle Grades Teachers, and Discrete Mathematics.*
Ed R. Wheeler* and **James Brawner**, Armstrong Atlantic State University (975-97-314)

3:40PM ► (115) *Applications of the Gilbreath Principle.*
David W Boyd, Valdosta State University (975-97-366)

3:55PM (116) *Maple Illustrations of Iterated Integrals.*
John A. Ziegler, Southern Polytechnic State University (975-97-387)

Special Session on Quantum Structures, I

3:40 PM – 5:30 PM **Room 219, Instructional Center**

Organizers: **Alexander G. Wilce**, Juniata College
Richard J. Greechie, Louisiana Technical University
Franklin E. Schroeck, Florida Atlantic University

3:40PM (117) *Simplicity.*
David Ritz Finkelstein, Georgia Institute of Technology (975-81-262)

4:10PM (118) *Strongly Symmetric Topological Test Spaces.*
Alexander Wilce, Juniata College (975-54-81)

4:40PM (119) *Property lattices for independent quantum systems.*
Boris Ischi, Department of Mathematics and Statistics, McGill University (975-81-185)

5:10PM (120) *Quantum Foundations in the Light of Quantum Information.*
Christopher A. Fuchs, Bell Labs (975-81-340)

Session for General Contributed Papers, I

4:10 PM – 6:05 PM **Room 140, Skiles Classroom Building**

4:10PM ► (121) *Mathematical Reviews: An Inside Look.* Preliminary report.
Norman Richert, Mathematical Reviews (975-00-391)

4:25PM ► (122) *Approximate Algorithm for Planarization of an Upward Digraph.*
Nassim Sohaee, University of Texas at Arlington (975-05-12)

4:40PM ► (123) *The hub number of a graph.*
Matthew Walsh, Auburn University (975-05-395)

4:55PM ► (124) *A Differentiation-Based Characterization of Primes.* Preliminary report.
Dennis P. Walsh, Middle Tennessee State University (975-11-237)

5:10PM ► (125) *The Davenport Constant of Certain Rank Three Finite Abelian Groups.* Preliminary report.
Michael A Freeze, UNC Wilmington (975-13-223)

5:25PM ► (126) *Integer Programming for Math Majors.*
John T Zerger, Catawba College (975-15-351)

5:40PM (127) *Maximal and Minimal Right Ideals in the Nearring of Polynomials.* Preliminary report.
Lucy Kabza* and **G. Alan Cannon**, SLU (975-16-307)

5:55PM (128) *A Higher Dimensional Generalization of Bailey Lemma and Rogers-Ramanujan Identities.* Preliminary report.
Hasan Coskun, Texas A&M University (975-33-169)

Invited Address

4:30 PM – 5:20 PM **Tennebaum Auditorium, Instructional Center**

► (129) *Uniqueness implies existence for solutions of boundary value problems for dynamic equations on time scales.*
Johnny Henderson, Auburn University (975-39-67)

Reception for All Participants

6:00 PM – 7:30 PM **Presidential Suites, Moore Student Success Center**

Saturday, March 9

MAA Business Meeting

8:00 AM – 8:45 AM **Tennebaum Auditorium, Instructional Center**

Meeting Registration

8:00 AM – 4:30 PM **Atrium, Instructional Center**

Exhibits and Book Sales

8:00 AM – 4:30 PM **Atrium, Instructional Center**

Special Session on Combinatorics and Graph Theory, I

8:00 AM – 12:05 PM **Room 115, Instructional Center**

Organizer: **John M. Harris**, Furman University

8:00AM ► (130) *On Ultimately Economical Digraphs.* Preliminary report.
Curtis Clark, Morehouse College (975-05-241)

8:30AM ► (131) *When is a random sequence graphical?* Preliminary report.
Anant P Godbole*, East Tennessee State Univ., **Megan Smith**, Lawrence University, and **Gabe Zimmer**, East Tennessee State Univ. (975-05-47)

8:55AM Break.

10:15AM (132) *A Class Of Polyhedral Maps With The Non-revisiting Cycle Property.*
Hari Pulapaka, Stetson University (975-05-319)

10:45AM ► (133) *Graph Minors and the k-Linked Problem.* Preliminary report.
Wei Bing, Chinese Academy of Sciences, **Guantao Chen**, Georgia State University, **Ronald J. Gould***, Emory University, **Kenichi Kawarabayashi**, Keio University, and **Florian Pfender**, Emory University (975-05-384)

11:15AM (134) *Bounding the Strong Chromatic Index of Random and Quasi-random graphs.*
Andrzej Czygrinow, Arizona State University, and **Brendan Nagle***, Georgia Institute of Technology and University of Nevada, Reno (975-05-421)

11:45AM ► (135) *Some New Results on Quasi Uniquely Edge Colorable Graphs.*
Mark Ginn* and **Brooke Cranswick**, Appalachian State University (975-05-363)

Special Session on Knot Theory, 3-Manifolds, 4-Manifolds, and Geometric Group Theory, II

8:00 AM – 11:35 AM **Room 213, Instructional Center**

Organizers: **Wolfgang H. Heil**, Florida State University
Jose Carlos Gómez-Larrañaga, CIMAT, Mexico

8:00AM (136) *Links and their complements.* **Cameron McA Gordon**, University of Texas at Austin (975-57-265)

8:30AM (137) *Dehn filling on outer torus of 1-bridge braid exterior.* **Ying-Qing Wu**, University of Iowa (975-57-287)

8:55AM Break.

10:15AM (138) *Constructing essential laminations and taut foliations in surgered 3-manifolds.* **Tao Li**, Oklahoma State University (975-57-268)

10:45AM (139) *Additivity properties of the width of a knot.* Preliminary report. **Jennifer C Schultens**, Emory University (975-57-264)

11:15AM (140) *Group Actions and Laminations.* Preliminary report. **Sergio R Fenley**, Florida State University (975-57-125)

Special Session on Graphs and Matroids, II

8:00 AM – 12:05 PM **Room 205, Instructional Center**

Organizers: **James G. Oxley**, Louisiana State University
Bogdan Oporowski, Louisiana State University
Robin Thomas, Georgia Institute of Technology

8:00AM (141) *Finding* 3*-shredders efficiently.* **Rajneesh Hegde**, Georgia Tech (975-05-166)

8:30AM (142) *Isoperimetric constants of infinite plane graphs.* **Xiaoya Zha**, Middle Tennessee State University (975-05-160)

8:55AM Break.

10:15AM (143) *Excluding $K_{2,n}$-minors.* **Guoli Ding**, LSU (975-05-240)

10:45AM (144) *Unavoidable $K_{3,k}$-Minors in Large 7-Connected Graphs.* **Thomas Boehme**, Technical University of Ilmenau, **John Maharry***, The Ohio State University, and **Bojan Mohar**, University of Ljubljana (975-05-195)

11:15AM (145) *Eulerian Digraph Immersion.* **Thor D Johnson*** and **Paul D Seymour**, Princeton University (975-05-329)

11:45AM (146) *A generalization of a theororem of Dirac.* **Tristan MJ Denley*** and **Haidong Wu**, University of Mississippi (975-05-145)

Special Session on Dynamic Equations on Time Scales, I

8:00 AM – 12:35 PM **Room 109, Instructional Center**

Organizers: **Martin J. Bohner**, Florida Institute of Technology
Billur Kaymakcalan, Georgia Southern University

8:00AM (147) *Telescoping Principles in Oscillation Theory.* Preliminary report. **Lynn H Erbe**, University of Nebraska (975-34-293)

8:30AM ► (148) *Miscellaneous Dynamic Equations on Time Scales.* Preliminary report. **Elvan Akin-Bohner**, Palm Bay, FL (975-39-298)

8:55AM Break

10:15AM (149) *Some Basic Results and Realizability Criteria for First-Order Matrix Lyapunov Systems.* **Kanuri N Murty*** and **Donald W Fausett**, Georgia Southern University (975-34-32)

10:45AM (150) *Some Fundamental Results on Controllability, Observability and Realizability of First-order Matrix Lyapunov Systems.* **Kanuri N. Murty** and **Laurene V. Fausett***, Georgia Southern University (975-34-317)

11:15AM (151) *On the classification of positive solutions of a higher order neutral differential equation.* **John R. Graef***, University of Tennessee at Chattanooga, **Chuanxi Qian** and **Bo Yang**, Mississippi State University (975-34-347)

11:45AM (152) *On the difference equation $y_{n+1} = \frac{y_{n-(2k+1)+p}}{y_{n-(2k+1)}+qy_{n-2l}}$.* **Edward A Grove**, **Gerasimos Ladas**, **Lynn Carole McGrath***, University of Rhode Island, and **H.A. El-Metwally**, Mansoura University (975-39-336)

12:15PM (153) *On $x_{n+1} = \max\left\{\frac{A_n}{x_n}, \frac{B_n}{x_n}\right\}$ with Periodic Parameters.* **Candace Marie Kent***, Virginia Commonwealth University, and **Michael A. Radin**, Rochester Institute of Technology (975-37-342)

Special Session on Probability and Combinatorics, II

8:00 AM – NOON **Room 113, Instructional Center**

Organizers: **Russell D. Lyons**, Georgia Institute of Technology
Prasad V. Tetali, Georgia Institute of Technology

8:00AM (154) *Dominos and hyperbolic polyhedra.* **Richard W Kenyon**, CNRS (975-82-99)

8:55AM Break.

10:15AM (155) *Adaptive Intersection and t-Threshold Problems.* **Claire Kenyon*** and **Jeremy Barbay**, U. Paris-Orsay (975-68-424)

11:15AM (156) *Urn models and cooled Brownian motion.* Preliminary report. **Robin Pemantle**, Ohio State University (975-60-222)

Special Session on Harmonic Analysis, II

8:25 AM – 12:30 PM **Room 209, Instructional Center**

Organizers: **Gerd Mockenhaupt**, Georgia Institute of Technology
Michael T. Lacy, Georgia Institute of Technology
Akos Magyar, University of Georgia

8:25AM ► (157) *Chebyshev problems for polynomials with integer coefficients.* **Igor E Pritsker**, Oklahoma State University (975-41-72)

8:55AM Break.

10:05AM (158) *Estimates of eigenfunctions in the integrable case.* **John Toth**, McGill, and **Steve Zelditch***, Johns Hopkins (975-35-269)

10:50AM (159) *Mass equidistribution for Hecke eigenforms.* **Wenzhi Luo***, The Ohio State University, and **Peter Sarnak**, Courant Institute (975-11-78)

11:25AM (160) *Fourier Transforms and Mazurkiewicz' Theorem.* **Robert P. Kaufman**, University of Illinois at Urbana-Champaign (975-42-63)

NOON ► (161) *The Uniform Distribution Theorem for ultraflat sequences of unimodular polynomials and its applications.* Preliminary report. **Tamas Erdelyi**, Texas A&M University (975-41-118)

Special Session on Symplectic and Contact Topology, II

8:30 AM – 12:05 PM **Room 217, Instructional Center**

Organizers: **Margaret Symington**, Georgia Institute of Technology
Gordana Matic, University of Georgia

8:30AM (162) *Relative family Gromov-Witten invariants and symplectomorphisms.* **Olguta Buse**, SUNY at Stony Brook (975-51-254)

8:55AM Break.

10:15AM (163) *Symplectic and Contact Quotients.* **Christopher Willett**, University of Illinois (975-53-242)

10:45AM (164) *Legendrian knots and contact homology.* **John B Etnyre**, University of Pennsylvania (975-57-146)

11:15AM (165) *Computational aspects of relative contact homology.* **Lenhard L. Ng**, AIM and IAS (975-57-308)

11:45AM (166) *Invariants of Legendrian Knots in Circle Bundles.* Preliminary report. **Joshua M. Sabloff**, Stanford University (975-57-74)

Invited Address

9:10 AM – 10:00 AM **Auditorium, Ferst Center for the Arts**

(167) *Going up and down.* **Georgia Benkart**, University of Wisconsin, Madison (975-05-05)

Special Session on Banach Spaces and Their Applications, II

10:15 AM – 12:05 PM **Room 117, Instructional Center**

Organizers: **Peter G. Casazza**, University of Missouri-Columbia
N. J. Kalton, University of Missouri-Columbia

10:15AM (168) *Banach Algebras and Gabor Frames.* Preliminary report. **Mark C Lammers**, Western Washington University (975-46-415)

10:45AM (169) *Integral Operators, Pseudodifferential Operators, and Gabor Frames.* **Christopher Heil**, Georgia Tech (975-46-245)

11:15AM (170) *Applications of Hilbert Space Frames.* **Peter G Casazza**, University of Missouri (975-46-45)

11:45AM ► (171) *Basis problems and subdivision of projections in Hilbert space.* **Palle Jorgensen**, University of Iowa (975-46-10)

Special Session on Quantum Structures, II

10:15 AM – 12:05 PM **Room 219, Instructional Center**

Organizers: **Alexander G. Wilce**, Juniata College
Richard J. Greechie, Louisiana Technical University
Franklin E. Schroeck, Florida Atlantic University

10:15AM (172) *Mondadic Algebras.* **John Harding**, New Mexico State University (975-06-106)

10:45AM (173) *Lattice Ordered Effect Algebras.* **Scott R. Sykes**, University of West Georgia (975-06-227)

11:15AM (174) *Quantales and Orthomodular lattices.* Preliminary report. **Leopoldo Roman**, Instituto de Matematicas,UNAM (975-06-176)

11:45AM (175) *An MOL that is not Frink-regular.* **Christian Hermann**, TU Darmstadt, and **Michael Roddy***, Brandon University (975-06-105)

Special Session on Technology and Distance Learning, II

10:15 AM – 12:05 PM **Room 149, Skiles Classroom Building**

Organizers: **Tom Morley**, Georgia Institute of Technology
Martha Abel, Georgia Southern University

10:15AM ► (176) *Teaching Statistics using the World Wide Web.* **Lothar A Dohse**, UNC-Asheville (975-62-115)

10:45AM ► (177) *Using the collaborative web in undergraduate education.* Preliminary report. **Pete Ludovice***, **Tom Morley** and **Matthew Realff**, Georgia Tech (975-97-299)

11:15AM ► (178) *A Web Server for Test Creation.* **Robert P Cook**, Georgia Southern University (975-68-291)

11:45AM ► (179) *Quick Ways to Incorporate Mathematica into the Classroom.* Preliminary report. **Iason Rusodimos***, **Barrett Walls** and **Jessica Craig**, Georgia Perimeter College - Dunwoody Campus (975-00-119)

Special Session on Bridges from 'Applied' to 'Mathematics', I

10:15 AM – 12:05 PM **Room 111, Instructional Center**

Organizers: **Peter Mucha**, Georgia Institute of Technology
John A. Pelesko, Georgia Institute of Technology
John E. McCuan, Georgia Institute of Technology
Guillermo H. Goldsztein, Georgia Institute of Technology

10:15AM ► (180) *An Overview of Electrostatic Actuation.* **John A Pelesko**, Georgia Institute of Technology (975-74-217)

10:45AM ► (181) *Symmetry-breaking and Bifurcation Phenomena for Capillary Surfaces and More on Exotic Containers.* Preliminary report. **Henry C Wente**, University of Toledo (975-49-381)

11:15AM ► (182) *Geometric problems involving surfaces.* Preliminary report. **Mohammad Ghomi**, University of South Carolina (975-53-359)

11:45AM (183) *Mean Curvature, Restoring Force, and Surface Shape.* **George I Kamberov***, Stevens Institute of Technology, and **Gerda L Kamberova**, Hofstra University (975-53-275)

Special Session on Frames, Wavelets, and Operator Theory, II

10:15 AM – 12:05 PM **Room 211, Instructional Center**

Organizers: **Christopher E. Heil**, Georgia Institute of Technology
Yang Wang, Georgia Institute of Technology

10:15AM (184) *A characterization of wavelet multiplicity functions.* **Lawrence W. Baggett**, University of Colorado (975-43-101)

10:45AM (185) *Wavelets, representations, and symmetric spaces.* **Gestur Olafsson*** and **R Fabec**, Louisiana State University (975-43-209)

11:15AM (186) *Dilations admitting MSF and non-MSF wavelets.* **Darrin M Speegle***, Saint Louis University, and **Marcin Bownik**, University of Michigan (975-42-248)

11:45AM (187) *Self-sffine sets and the supports of the scaling functions.* **Xing-Kang He**, Cental China Normal Univ., and **Ka-Sing Lau***, Chinese Univ of HK (975-41-124)

Special Session on Elementary Mathematical Modeling, II

10:15 AM – 12:05 PM **Tennebaum Auditorium, Instructional Center**

Organizer: **Mary Ellen Davis**, Georgia Perimeter College

10:15AM ► (188) *Teaching "Introduction to Mathematical Modeling" When Every Student Has a Notebook Computer and a CAS.* **Mary H. Stephens**, Clayton College and State Univeristy (975-97-412)

10:45AM ► (189) *Applications of the Catalan Numbers.* **Kitt Lumley**, Columbus State University (975-97-413)

11:15AM ► (190) *Making Data Gathering Projects Effective and Efficient.* Preliminary report. **Susan S Nelson**, Georgia Perimeter College (975-97-400)

11:45AM ► (191) *Problems and Projects in Elementary Mathematical Modeling.* **C. Henry Edwards***, University of Georgia, and **Mary Ellen Davis**, Georgia Perimeter College (975-97-410)

Special Session on Linear Algebra and Matrix Theory, II

10:15 AM – 12:05 PM **Room 119, Instructional Center**

Organizers: **Frank J. Hall**, Georgia State University
Zhongshan Li, Georgia State University

10:15AM ► (192) *Off-diagonal block of a two by two block Hermitian matrix.* **Chi-Kwong Li**, The College of William and Mary (975-15-39)

10:45AM ► (193) *Schur Complements and M-matrices.* **Tom Morley**, Georgia Tech (975-15-17)

11:15AM ► (194) *On the Maximal Number of Odd Submatrices of 0-1 Matrices.* Preliminary report. **Anant Godbole**, **Michael Marks**, **Rick Norwood** and **George D Poole***, East Tennessee State University (975-15-37)

11:45AM ► (195) *The role of proof in comprehending and teaching elementary linear algebra.* Preliminary report. **Frank Uhlig**, Auburn University (975-97-19)

Special Session on Mathematical Models in Biology, II

10:15 AM – 12:05 PM **Room 215, Instructional Center**

Organizer: **Robert D. Fray**, Furman University

10:15AM ► (196) *Landmarks as conventions.* Preliminary report. **M Mesterton-Gibbons***, Department of Mathematics, Florida State University, and **E S Adams**, Department of Ecology & Evolutionary Biology, University of Connecticut (975-92-174)

10:45AM (197) *Dispersal, Competition and Spatio-temporal Heterogeneity.* **Konstantin Mischaikow**, Georgia Institute of Technology (975-92-151)

11:15AM ► (198) *Dynamics of single-substrate continuous cultures.* Preliminary report. **Jason Shoemaker**, **Atul Narang**, **Sergei S Pilyugin***, University of Florida, and **Thomas Egli**, EAWAG (975-34-197)

11:45AM ► (199) *Modeling immune responses.* Preliminary report. **Rustom Antia**, Emory University (975-92-312)

Special Session on Number Theory, II

10:15 AM – 12:05 PM **Room 105, Instructional Center**

Organizer: **David Penniston**, Furman University

10:15AM (200) *On the factorization of $n(n+1)$.* Preliminary report. **Michael Bennett**, University of British Columbia and University of Illinois, **Michael Filaseta*** and **Ognian Trifonov**, University of South Carolina (975-11-322)

10:45AM (201) *Nonvanishing of Fourier Coefficients of Modular Forms.* **Emre Alkan**, University of Wisconsin (975-11-374)

11:15AM ► (202) *Anatomy of an integer.* Preliminary report. **Andrew J Granville**, University of Georgia (975-11-372)

11:45AM (203) *On the largest prime factor of consecutive integers.* **Antal Balog**, A. Renyi Mathematical Institute, Budapest (975-11-76)

Special Session on Automated Reasoning in Mathematics and Logic, II

10:15 AM – 12:35 PM **Room 240, Skiles Classroom Building**

Organizer: **Johan G. F. Belinfante**, Georgia Institute of Technology

10:15AM (204) *Algorithms for Reducing Structures in Verification.* **Raffaella Gentilini**, **Carla Piazza** and **Alberto Policriti***, University of Udine (975-68-226)

10:45AM (205) *A modularization mechanism for interactive proof-development.* **Eugenio G. Omodeo***, Universita' di L'Aquila, Dipartimento di Informatica, and **Jacob T. Schwartz**, New York University, Dept. of Computer Science (975-03-104)

11:15AM (206) *Automated validation of three-variable formulations of set-pairing.* **Andrea Formisano***, Dip. di Matematica e Informatica, Univ. di Perugia, **Eugenio G Omodeo**, Dip. di Matematica Pura e Applicata, Univ. di L'Aquila, and **Alberto Policriti**, Dip. di Matematica e Informatica, Univ. di Udine (975-03-102)

11:45AM ► (207) *Translation of Resolution Proofs into Higher Order Natural Deduction.* Preliminary report. **Hans de Nivelle**, Max Planck Institut (975-03-135)

12:15PM Discussion

Special Session on Algebraic Combinatorics, II

10:15 AM – 12:05 PM **Room 243, Skiles Classroom Building**

Organizer: **Mihai A. Ciucu**, Georgia Institute of Technology

10:15AM (208) *Tribasic integrals and identities of Rogers-Ramanujan type.* Preliminary report. **Mourad E.H. Ismail**, University of South Florida, and **Dennis Stanton***, University of Minnesota (975-05-310)

10:45AM (209) *Four Equivalent Formulations of the Jeu de Taquin Property for Posets.* **Robert A. Proctor**, University of North Carolina Chapel Hill (975-05-180)

11:15AM (210) *A Schensted correspondence for the Weil representation.* Preliminary report. **Tom Roby**, Cal State Hayward (975-05-343)

11:45AM (211) *Distributive lattices and representations of rank two simple Lie algebras.* Preliminary report. **Robert G. Donnelly***, **Scott J. Lewis**, **Robert H. Pervine**, Murray State University, and **Norman Wildberger**, University of New South Wales (Sydney) (975-05-191)

Special Session on Research on the Mathematical Education of Undergraduates, II

10:15 AM – 12:30 PM **Room 207, Instructional Center**

Organizer: **Joe Wimbish**, Huntingdon College

10:15AM ► (212) *Excellence in Mathematics through Communication and Collobration.* **Gerald L Marshall**, Tri-County Technical College (975-97-48)

10:45AM ► (213) *Disproofs and Counterexamples: The mathematics of contradiction.* Preliminary report. **Connie M Campbell**, Millsaps College (975-97-233)

11:45AM ► (214) *Teaching AP students who have "done" calculus.* Preliminary report. **William (Bill) S. Mahavier**, Emory University (975-97-349)

Special Session on Computation in the Mathematical Sciences, I

10:15 AM – 12:05 PM **Room 107, Instructional Center**

Organizers: **Sabrina A. Hessinger**, Armstrong Atlantic State University

Mark D. Cawood, Clemson University

10:15AM ► (215) *Interactice Computer Presentation of Books I-IV of Euclid's Elements.* **John T. Poole**, Furman University (975-97-139)

10:45AM ► (216) *Computational Frameworks for a Conjecture on Primes 1(mod 3).* **Swarnameenakshi Manickam**, Yale University, and **Shan Manickam***, Western Carolina University (975-11-171)

11:15AM ► (217) *Elementary Grobner Basis Theory.* **Jeffrey W. Clark**, Elon University (975-14-179)

11:45AM ► (218) *Computational Aspects of Determining Galois Groups of Differential Equations.* **Sabrina A Hessinger**, Armstrong Atlantic State University (975-12-393)

Session for Contributed Papers by Undergraduates

10:15 AM – 12:40 PM **Room 140, Skiles Classroom Building**

10:15AM ► (219) *Dieting with Differential Equations.* Preliminary report. **R Lance Yarbrough**, Samford University (975-34-186)

10:30AM ► (220) *Circular Bernstein-Bezier Spline Approximation with Knot Removal.* Preliminary report. **Catherine M Cusimano**, Samford University (975-65-187)

10:45AM ► (221) *Shoelaces - The Long and the Short of It.* **Katie Joy Park**, Elon University (975-05-212)

11:00AM ► (222) *A Few Consequences of Burnside's Lemma.* **Melinda E. Harvey**, High Point University (975-05-234)

11:15AM ► (223) *RISKy Business.* Preliminary report. **Sharon L Blatt**, Elon University (975-60-239)

11:30AM ► (224) *Numerov's method for a special class of higher order differential equations.* **Christopher S McMahan***, Austin Peay State University, and **Samuel N Jator**, APSU (975-65-325)

11:45AM ► (225) *Eigenvalue analysis and behavior of Leslie Adjacency matrices in age-specific population modeling.* Preliminary report. **Philip Torry Patton**, Samford University (975-15-337)

NOON ► (226) *Making Farming More Interesting With Mathematics.* **Amber D. Dennison**, Elon University (975-11-386)

12:15PM ► (227) *Creating Azulejo Using A Vector Basis.* **Erin Elizabeth Krupa**, Elon University (975-15-389)

12:30PM ► (228) *The Importance of a Match.* **Justin T. Luckett**, Elon University (975-00-398)

Undergraduate Poster Session

10:15 AM – NOON **Room 146, Skiles Classroom Building**

Organizer: **Robert L. Bernhardt**, East Carolina University

10:15AM ► (229) *Octahedral Insanity - A Step up from the problem presented by "Instant Insanity".* **Andrews Jebasingh**, King College (975-UN-205)

10:15AM ► (230) *A Comparison of Modeling and Traditional Approaches to College Algebra.* **Jennifer L. Kalis*** and **Barbara B. Ward**, Belmont University (975-UN-210)

10:15AM ► (231) *A Nonlinear Predator-Prey Model with Competition.* Preliminary report. **Molly M Gibson*** and **Douglas Riley**, Birmingham-Southern College (975-UN-235)

10:15AM ► (232) *Using Lagrange Multipliers to Maximize Hydroelectric Power Production.* Preliminary report. **Jason D. Grigsby**, **Kevin J. Freeze*** and **Bernadette Mullins**, Birmingham-Southern College (975-UN-246)

10:15AM ► (233) *Employing Group Theory to Explain the Four Aces Card Trick.* Preliminary report. **Susan Elizabeth Geist***, **Auntara De** and **Bernadette Mullins**, Birmingham-Southern College (975-UN-280)

10:15AM ► (234) *Rookies: Rook Polynomials Simplified.* **Cecil K. Itty*** and **Matthew Tapia**, Belmont University (975-UN-420)

Invited Address

2:00 PM – 2:50 PM **Tennebaum Auditorium, Instructional Center**

(235) *The interplay between graphs and matroids.* **James G. Oxley**, Louisiana State University (975-05-02)

Special Session on Combinatorics and Graph Theory, II

3:05 PM – 5:55 PM **Room 115, Instructional Center**

Organizer: **John M. Harris**, Furman University

3:05PM (236) *Graphs with Two Disjoint Total Dominating Sets.* Preliminary report. **Izak Broere**, **Michael Dorfling**, Rand Afrikaans University, **Wayne Goddard**, University of Natal, Durban, **Johannes H Hattingh***, Georgia State University, **Michael A Henning**, University of Natal, Pietermaritzburg, and **Elna Ungerer**, Rand Afrikaans University (975-05-324)

3:35PM ► (237) *On a Game related to Magic-Vertex Labellings.* Preliminary report. **Bert L. Hartnell***, **Kristin Schmeisser** and **Jacki Whiteley**, Saint Mary's University (975-05-306)

4:05PM (238) *Static Mastermind.* **Wayne Goddard**, University of Natal (975-05-423)

4:35PM ► (239) *A problem about integer partitions.* **E. Rodney Canfield***, University of Georgia, and **Konrad Engel**, Rostock University (975-05-80)

5:05PM (240) *Counting irreducible Feynman diagrams exactly and asymptotically.* Preliminary report. **Robert W Robinson**, University of Georgia (975-05-279)

5:35PM (241) *Disjoint products and S-partitions.* **Lorenzo Traldi**, Lafayette College (975-05-24)

Special Session on Banach Spaces and Their Applications, III

3:05 PM – 5:55 PM **Room 117, Instructional Center**

Organizers: **Peter G. Casazza**, University of Missouri-Columbia
N. J. Kalton, University of Missouri-Columbia

3:05PM (242) *The Theorem of Ramsey reviewed.* Preliminary report. **Thomas B Schlumprecht**, Texas A&M University (975-46-422)

3:35PM (243) *Problems on spreading models.* Preliminary report. **E Odell**, University of Texas at Austin (975-46-285)

4:05PM (244) *Duality and classical operators in function spaces.* **Anna Kamińska***, The University of Memphis, and **Mieczysław Mastyło**, A.Mickiewicz University (975-46-266)

4:35PM (245) *Thresholding Greedy Algorithm, Greedy Bases, and Duality.* **S. J. Dilworth**, University of South Carolina, **N. J. Kalton**, University of Missouri-Columbia, **Denka N. Kutzarova***, Bulgarian Academy of Sciences, currently at Univeristy of Illinois at Urbana-Champaign, and **V. N. Temlyakov**, University of South Carolina (975-46-309)

5:05PM (246) *Orbits of operators satisfying some growth conditions.* Preliminary report. **Driss Drissi**, Kuwait University (975-47-38)

5:35PM (247) *On the structure of level sets of Lipschitz quotient maps from $\mathbb{R}^n$ into $\mathbb{R}$.* Preliminary report. **Beata Randrianantoanina**, Miami University (975-54-361)

Special Session on Knot Theory, 3-Manifolds, 4-Manifolds, and Geometric Group Theory, III

3:05 PM – 5:55 PM **Room 213, Instructional Center**

Organizers: **Wolfgang H. Heil**, Florida State University
Jose Carlos Gómez-Larrañaga, CIMAT, Mexico

3:05PM ► (248) *Triple point numbers of twist-spun trefoils after Satoh and Shima.* **J. Scott Carter**, University of South Alabama (975-57-154)

3:35PM (249) *Torsion Numbers of Augmented Groups.* **Daniel S Silver*** and **Susan G Williams**, University of South Alabama (975-57-288)

4:05PM (250) *The classification of rigid even Coxeter groups.* Preliminary report. **Michael L Mihalik**, Vanderbilt University (975-20-188)

4:35PM (251) *Cocycle knot invariants, Alexander matrices, and generalizations.* **Masahico Saito**, University of South Florida (975-57-132)

5:05PM (252) *Eigenvalue fields of hyperbolic manifolds.* **Emily Hamilton***, Emory University, and **Alan W Reid**, University of Texas at Austin (975-57-181)

5:35PM (253) *Coverings of Seifert knots.* Preliminary report. **Víctor Núñez*** and **Enrique Ramírez**, CIMAT (975-57-267)

Special Session on Quantum Structures, III

3:05 PM – 5:55 PM **Room 219, Instructional Center**

Organizers: **Alexander G. Wilce**, Juniata College
Richard J. Greechie, Louisiana Technical University
Franklin E. Schroeck, Florida Atlantic University

3:05PM (254) *The Positive Cone in a Unigroup with Finite Unit Interval.* **David J. Foulis**, University of Massachusetts (975-06-66)

4:05PM (255) *Algebraic Partial Boolean Algebras.* **Derek Smith**, Lafayette College (975-06-278)

4:35PM (256) *Maximal Filters of Projections.* Preliminary report. **David V Feldman**, University of New Hampshire (975-47-162)

5:05PM (257) *Quantum Computation and Quantum Structures.* **Howard N. Barnum**, Los Alamos National Laboratories (975-81-362)

5:35PM (258) *A discussion of Sequential Effect Algebras.* **Richard Greechie***, Louisiana Tech University, and **Stanley Gudder**, University of Denver (975-81-289)

Special Session on Harmonic Analysis, III

3:05 PM – 5:55 PM **Room 209, Instructional Center**

Organizers: **Gerd Mockenhaupt**, Georgia Institute of Technology
Michael T. Lacy, Georgia Institute of Technology
Akos Magyar, University of Georgia

3:05PM (259) *Some maximal functions associated to the discrete Heisenberg group.*
Stephen Wainger, University of Wisconsin (975-42-219)

3:40PM (260) *Solvability of partial differential operators on the Heisenberg group.* Preliminary report.
Jingzhi Tie, University of Georgia (975-42-155)

4:15PM (261) *Multiplier operators on the Heisenberg group.*
Andrea J Fraser, Dalhousie University (975-43-315)

4:50PM (262) *On the absence of positive eigenvalues of Schrodinger operators with rough potentials.*
Alexandru D Ionescu, MIT and University of Wisconsin, Madison (975-35-263)

5:25PM (263) *On the low dimensional Kakeya problem.* Preliminary report.
Nets Hawk Katz*, Washington University St. Louis, and **Terry Tao**, UCLA (975-28-371)

Special Session on Bridges from 'Applied' to 'Mathematics', II

3:05 PM – 4:55 PM **Room 111, Instructional Center**

Organizers: **Peter Mucha**, Georgia Institute of Technology
John A. Pelesko, Georgia Institute of Technology
John E. McCuan, Georgia Institute of Technology
Guillermo H. Goldsztein, Georgia Institute of Technology

3:05PM ► (264) *Electrostatic Micro Actuators.*
Wenjing Ye, Assistant Professor, Georgia Institute of Technology (975-65-406)

3:35PM ► (265) *Annular Capillary Surfaces.* Preliminary report.
Alan R Elcrat, Wichita State University (975-35-129)

4:05PM ► (266) *Taylor's experiment and systems of elliptic equations.* Preliminary report.
John McCuan* and **John Pelesko**, Georgia Tech (975-49-335)

4:35PM Discussion

Special Session on Graphs and Matroids, III

3:05 PM – 5:55 PM **Room 205, Instructional Center**

Organizers: **James G. Oxley**, Louisiana State University
Bogdan Oporowski, Louisiana State University
Robin Thomas, Georgia Institute of Technology

3:05PM (267) *Partitioning matroids with only small cocircuits.*
Bogdan Oporowski, Louisiana State University (975-05-355)

3:35PM (268) *Random Bases in Matroids.*
Russell D Lyons, Indiana University/Georgia Tech (975-05-107)

4:05PM Discussion

4:35PM (269) *Contractible elements in graphs and matroids.*
Haidong Wu, University of Mississippi (975-05-373)

5:05PM (270) *Some Structural Results for Matroids.*
S. R. Kingan*, Penn State Harrisburg, and **M. Lemos**, Universidade Federal de Pernambuco (975-05-62)

5:35PM (271) *On Cocircuits of Bicircular Matroids.* Preliminary report.
Jenny McNulty*, The University of Montana, and **Nancy Ann Neudauer**, Pacific University (975-05-417)

Special Session on Numerical Linear Algebra and Its Applications, II

3:05 PM – 4:25 PM **Room 207, Instructional Center**

Organizers: **Michele Benzi**, Emory University
Steven B. Damelin, Georgia Southern University
James Nagy, Emory University

3:05PM ► (272) *Multivariable polynomial interpolation using partitioned matrices.* Preliminary report.
Richard D Neidinger, Davidson College (975-65-305)

3:35PM (273) *The representation and iterative methods for the Drazin inverse with complex sepctrum.* Preliminary report.
Xiezhang Li*, Georgia Southern University, and **Yimin Wei**, Fudan University (975-65-07)

4:05PM ► (274) *A superconvergence iterative method for large scale linear algebraic system.*
Wujian Peng* and **B. Datta**, Northern Illinoise University (975-65-140)

Special Session on Frames, Wavelets, and Operator Theory, III

3:05 PM – 5:55 PM **Room 211, Instructional Center**

Organizers: **Christopher E. Heil**, Georgia Institute of Technology
Yang Wang, Georgia Institute of Technology

3:05PM (275) *A Unified Characterization of Reproducing Systems Generated by a Finite Family, I.*
Demetrio Labate, Washinton University (975-42-122)

3:35PM (276) *A Unified Characterization of Reproducing Systems Generated by a Finite Family, II.*
Eugenio Hernandez, Universidad Autonoma de Madrid, **Demetrio Labate**, Washington University, St. Louis, and **Guido Weiss***, Wshington University, St. Louis (975-41-116)

4:05PM (277) *Finite Normalized Tight Frames.*
Matthew C. Fickus, Cornell University (975-43-271)

4:35PM (278) *Densities of Frames.* Preliminary report.
R. Balan, Siemens Corporate Research, **P. Casazza**, U. of Missouri, **C. Heil**, Georgia Institute of Technology, and **Z. Landau***, University of California, Berkeley (975-42-397)

5:05PM (279) *The Balian-Low Theorem and Regularity of Gabor Systems.* Preliminary report.
Wojciech Czaja, University of Maryland (975-42-370)

5:35PM ► (280) *A quantum computing algorithm for multiresolution wavelets.*
Palle E T Jorgensen, University of Iowa (975-42-114)

Special Session on Linear Algebra and Matrix Theory, III

3:05 PM – 5:55 PM **Room 119, Instructional Center**

Organizers: **Frank J. Hall**, Georgia State University
Zhongshan Li, Georgia State University

3:05PM *Properties of the Brualdi-Li Tournament Matrix.*
► (281) **James R Weaver***, **Rohan Hemasinha**, University of West Florida, **Stephen Kirkland**, University of Regina, and **Jeffrey L Stuart**, Pacific Lutheran University (975-15-09)

3:35PM *Some Graph and Matrix Theoretic Properties of*
► (282) *Divisor Tournaments.* Preliminary report.
Rohan Hemasinha* and **Rebecca A Winslow**, University of West Florida (975-15-15)

4:05PM *The P- and P_0-matrix completion problems.*
(283) **Luz M DeAlba**, Drake University (975-15-11)

4:35PM *Ray–Patterns of Matrices.*
► (284) **Judith J McDonald***, Washington State University, **G Y Lee**, Hanseo, **D D Olesky**, University of Victoria, **B L Shader**, University of Wyoming, **M J Tsatsomeros**, Washington State University, and **P van den Driessche**, University of Victoria (975-15-58)

5:05PM *On ranks of matrices associated with trees.*
(285) **Guantao Chen**, **Frank J Hall***, **Zhongshan Li**, Georgia State University, and **Bing Wei**, Georgia Institute of Technology (975-15-29)

5:35PM *Sign patterns that require all distinct eigenvalues.*
(286) **Zhongshan Li*** and **Laura Harris**, Georgia State University (975-15-31)

Special Session on Symplectic and Contact Topology, III

3:05 PM – 5:25 PM **Room 217, Instructional Center**

Organizers: **Margaret Symington**, Georgia Institute of Technology
Gordana Matic, University of Georgia

3:05PM *Special Lagrangian Submanifolds and Mirror*
(287) *Symmetry.*
Sema Salur, Cornell University (975-53-206)

3:35PM *Topologically characterizing symplectic manifolds.*
(288) Preliminary report.
Robert E. Gompf, University of Texas, Austin (975-57-369)

4:05PM *On the topology of Stein fillings.*
(289) **Andras I Stipsicz**, Princeton University, Princeton, NJ (975-57-71)

4:35PM *Symplectic cobordisms and open book*
(290) *decompositions.* Preliminary report.
David T Gay, Mathematics Department, University of Arizona (975-57-88)

5:05PM *Grafting Seiberg-Witten Monopoles.*
(291) **Stanislav Jabuka**, Michigan State University (975-53-51)

Special Session on Number Theory, III

3:05 PM – 5:55 PM **Room 105, Instructional Center**

Organizer: **David Penniston**, Furman University

3:05PM *Weierstrass points on modular curves and*
(292) *supersingular j-invariants.*
Scott Ahlgren*, University of Illinois at Urbana-Champaign, and **Ken Ono**, University of Wisconsin at Madison (975-11-182)

3:35PM *Exceptional covers and bijections of rational points.*
(293) **Thomas J Tucker**, University of Georgia (975-11-150)

4:05PM *The Lang-Trotter conjecture on average.*
(294) **Kevin L James**, Clemson University (975-11-367)

4:35PM *Finding elements of prescribed order in*
(295) *Shafarevich-Tate groups.* Preliminary report.
Steve Donnelly, Universiy of Georgia (975-11-380)

5:05PM *The Rationality of Vector Valued Modular Forms*
(296) *and Implications for a Theorem of Borcherds of Gross-Kohnen-Zagier Type.*
William J McGraw, University of Wisconsin, Madison (975-11-357)

5:35PM Discussion

Special Session on Automated Reasoning in Mathematics and Logic, III

3:05 PM – 5:25 PM **Room 240, Skiles Classroom Building**

Organizer: **Johan G. F. Belinfante**, Georgia Institute of Technology

3:05PM *Mechanization of the System of the Principia*
(297) *Mathematica of Russell and Whitehead.* Preliminary report.
M. Randall Holmes, Boise State University (975-03-109)

3:35PM *Interpreting set theory in the variable-free,*
(298) *equational calculus of relations.*
Steven R Givant, Mills College (975-03-90)

4:05PM *Finite Model Search and Single Axioms.* Preliminary
► (299) report.
William McCune, Argonne National Laboratory (975-03-93)

4:35PM *Proving theorems automatically and interactively*
► (300) *with TPS.*
Peter B. Andrews, Carnegie Mellon University (975-03-86)

5:05PM *Specifying Tournament Schedules for General Model*
► (301) *Generators.* Preliminary report.
Hantao Zhang, University of Iowa (975-68-111)

Special Session on Algebraic Combinatorics, III

3:05 PM – 5:55 PM **Room 243, Skiles Classroom Building**

Organizer: **Mihai A. Ciucu**, Georgia Institute of Technology

3:05PM *Estimating Maximum by Moments for Functions on*
(302) *Orbits.*
Alexander Barvinok, University of Michigan (975-05-108)

3:35PM *A-Theory of Subspace Arrangements.* Preliminary
(303) report.
Eric Babson, University of Washington, **Helene Barcelo***, Arizona State University, and **Reinhard Laubenbacher**, Virginia Bioinformatics Institute (975-05-356)

4:05PM *Coxeter-like complexes.* Preliminary report.
(304) **Eric Kendall Babson***, Seattle, and **Victor Reiner**, Minneapolis (975-05-416)

4:35PM *A Schröder Generalization of Haglund's Statistic on*
(305) *Catalan Paths.* Preliminary report.
Eric S. Egge, Gettysburg College, **James Haglund**, University of Pennsylvania, **Kendra Killpatrick**, Colorado State University, and **Darla Kremer***, Gettysburg College (975-05-168)

5:05PM *Graphs on generating sets of groups: Higman's*
(306) *Lemma and Neumann's problem.*
Igor Pak, MIT (975-20-138)

5:35PM *Monomers, dimers, hard cores, the Yang-Lee Edge,*
(307) *branched polymers and dimensional reduction: Combinatorics and asymptotics from statistical mechanics.*
Michael E. Fisher, University of Maryland (975-05-157)

Special Session on Real World Applications of Mathematics, II

3:05 PM – 5:25 PM **Room 246, Skiles Classroom Building**

Organizer: **Mark C. Ginn**, Appalachian State University

3:05PM (308) *Helping the Registrar Schedule Classes: An application of Mathematical Programming.* **Caroline B. Wright**, Rhodes College (975-90-385)

3:35PM ► (309) *The Treatment of Long-Lived, Carbon-Containing Products in Inventories of Greenhouse Gas Emissions to the Atmosphere.* Preliminary report. **Eric Marland***, Appalachian State University, and **Gregg Marland**, Oak Ridge National Laboratory (975-92-390)

4:05PM ► (310) *The Mathematics of Remote Sensing.* Preliminary report. **Kevin M Peterson*** and **David R Perault**, Lynchburg College (975-00-364)

4:35PM (311) *Modeling a Quantum Wire.* **Katharine F. Gurski*** and **Geoffrey B. McFadden**, National Institute for Standards and Technology (975-34-156)

5:05PM ► (312) *Mathematical Problems in Ultra Wide-band Radio.* Preliminary report. **Marcus H Pendergrass**, Time Domain Corporation (975-94-89)

Special Session on Dynamic Equations on Time Scales, II

3:05 PM – 6:25 PM **Room 109, Instructional Center**

Organizers: **Martin J. Bohner**, Florida Institute of Technology

Billur Kaymakcalan, Georgia Southern University

3:05PM ► (313) *Dependence of solutions of IVPs for dynamic systems on initial conditions.* Preliminary report. **Martin J Bohner**, Florida Institute of Technology (975-39-296)

3:35PM (314) *Oscillatory and asymptotic behavior of half-linear and quasilinear dynamic equations.* **Pavel Rehak**, University of Nebraska, Lincoln (975-39-260)

4:05PM (315) *Generalized Quasilinearization for Dynamic Initial Value Problems.* Preliminary report. **Bonita A. Lawrence**, Marshall University (975-34-277)

4:35PM (316) *Existence and uniqueness results for discrete second order periodic boundary value problems.* **Ferhan Atici***, Western Kentucky University, and **Alberto Cabada**, Universidade de Santiago de Compostela (975-39-218)

5:05PM (317) *Quadratic functionals and normality for symplectic dynamic systems.* **Roman Hilscher**, Michigan State University (975-34-170)

5:35PM (318) *A Spectral Characterization of Exponential Stability for Linear Time-Invariant Systems on Time Scales.* **Christian Poetzsche**, Universitaet Augsburg, **Stefan Siegmund***, Georgia Institute of Technology, and **Fabian Wirth**, Universitaet Bremen (975-34-35)

6:05PM ► (319) *A Rigorous Numerical Method for the Analysis of an Infinite Dimensional Dynamical System.* Preliminary report. **Sarah Day**, Georgia Tech (975-37-353)

Special Session on Computation in the Mathematical Sciences, II

3:05 PM – 4:55 PM **Room 107, Instructional Center**

Organizers: **Sabrina A. Hessinger**, Armstrong Atlantic State University

Mark D. Cawood, Clemson University

3:05PM ► (320) *SolView - An Immersive Animated 3D Flow Visualization Tool.* **L. Kelly Waters**, Clemson University (975-76-360)

3:35PM ► (321) *A Nonlinear Subgrid Model for Convection Dominated, Convection Diffusion Problems.* Preliminary report. **Mark E Cawood**, Clemson University (975-35-79)

4:05PM ► (322) *Using Circadian Rhythms Models to Identify Optimal Shift Work Schedules.* **Erin K. McNelis*** and **Michael M. Kostreva**, Clemson University, Department of Mathematical Sciences (975-92-272)

4:35PM ► (323) *Stochastic Minimum Spanning Trees.* Preliminary report. **Kevin R Hutson**, Clemson University (975-90-311)

Special Session on Probability and Combinatorics, III

3:05 PM – 5:55 PM **Room 113, Instructional Center**

Organizers: **Russell D. Lyons**, Georgia Institute of Technology

Prasad V. Tetali, Georgia Institute of Technology

3:05PM (324) *Knockin' 'em Down, One After Another.* Preliminary report. **James Allen Fill***, Department of Mathematical Sciences, The Johns Hopkins University, and **David Bruce Wilson**, Theory Group, Microsoft Research (975-60-375)

4:05PM (325) *Anatomy of a permutation.* Preliminary report. **Andrew Granville**, University of Georgia (975-05-378)

4:35PM ► (326) *Two questions on coins with unknown bias.* Preliminary report. **Yuval Peres**, University of California, Berkeley (975-60-418)

5:35PM (327) *On the meeting point for random spanning trees.* **Philippe Marchal**, CNRS and Georgia Tech (975-60-276)

Session for General Contributed Papers, II

3:05 PM – 5:00 PM **Room 149, Skiles Classroom Building**

3:05PM (328) *Illuminating a convex lateral surface by horizontal directions.* **Boris V Dekster**, Mount Allison University (975-52-25)

3:20PM (329) *Coefficient estimates for polynomials on the unit interval.* Preliminary report. **Dimiter P. Dryanov**, Universite de Montreal, **Mohammed A. Qazi***, Tuskegee University, and **Qazi I. Rahman**, Universite de Montreal (975-41-189)

3:35PM ► (330) *What goes down might come up.* **Andrew J Simoson**, King College (975-34-199)

3:50PM ► (331) *Interactive computation and visualization of geodesics using stereo pairs.* **Jack R Pace**, Southern Polytechnic State University (975-53-211)

4:05PM (332) *Ergodic Properties of Almost Automorphic Suspension Flows.* Preliminary report.
Arno Berger, Georgia Institute of Technology (975-37-333)

4:20PM ► (333) *The Rationals of the Cantor Set.* Preliminary report.
Ioana Mihaila, Coastal Carolina University (975-26-354)

4:35PM ► (334) *Name Order in Lexicographically Generated Combinations.*
Daniel C Fielder, School of ECE, Georgia Institute of Technology (975-05-82)

4:50PM (335) *A New Carlson Type Inequality.* Preliminary report.
L Larsson, Michigan State University (975-28-425)

Session for General Contributed Papers, III

3:05 PM – 4:30 PM **Room 140, Skiles Classroom Building**

3:05PM ► (336) *Representing Group Codes as Permutation Codes.*
John K Karlof, University of North Carolina at Wilmington (975-94-173)

3:20PM ► (337) *On the Estimation of Reliability and Hazard Rate using Length-biased Transformation.*
Prashant S. Sansgiry* and **Olcay Akman**, Coastal Carolina University (975-62-259)

3:35PM (338) *Sectorial Convergence for U-statistics.* Preliminary report.
Anda Gadidov, State University of West Georgia (975-60-243)

3:50PM (339) *Wavelet Frames and Their Applications to Wireless Transmission.*
Alexander Petukhov, University of South Carolina (975-41-339)

4:05PM (340) *Average Number of Real Zeros of Random Polynomials.* Preliminary report.
Robert Bozeman* and **M Sambandham**, Morehouse College (975-60-365)

4:20PM ► (341) *Next Generation Space Telescope Cost Modeling: Preliminary Report.* Preliminary report.
Gayle Reese* and **Ginger Holmes Rowell**, Middle Tennessee State University (975-62-411)

Sunday, March 10

Special Session on Knot Theory, 3-Manifolds, 4-Manifolds, and Geometric Group Theory, IV

8:00 AM – NOON **Room 213, Instructional Center**

Organizers: **Wolfgang H. Heil**, Florida State University
Jose Carlos Gómez-Larrañaga, CIMAT, Mexico

8:00AM (342) *Isolated critical points of maps $\mathbb{R}^4 \to \mathbb{R}^2$, contact forms on S^3, the enhanced Milnor number, and quasipositive fibered links.* Preliminary report.
Lee Rudolph, Clark University (975-57-113)

8:30AM (343) *Invariants of the Lusternik-Schnirelmann type for 3-manifolds.* Preliminary report.
José-Carlos Gómez-Larrañaga*, CIMAT, MEXICO, **Francisco González-Acuña**, UNAM, MEXICO, and **Wolfgang Heil**, Florida State University (975-57-190)

8:55AM Break.

10:10AM ► (344) *On the relationship between crossing number and the length of thick knots and links.* Preliminary report.
Claus Ernst*, Western Kentucky University, and **Yuanan Diao**, University of North Carolina at Charlotte (975-53-270)

10:40AM (345) *On the classification of rational 3-tangles: Applications to Gin recombination.* Preliminary report.
Cabrera Hugo, IPICYT (975-57-253)

11:10AM (346) *The Lower Bounds Of The Lengths Of Thick Knots.* Preliminary report.
Yuanan Diao, UNC Charlotte (975-57-100)

11:40AM ► (347) *The state of the game in the enumeration of classical links.* Preliminary report.
Morwen B Thistlethwaite, University of Tennessee, Knoxville (975-57-344)

Special Session on Bridges from 'Applied' to 'Mathematics', III

8:00 AM – NOON **Room 111, Instructional Center**

Organizers: **Peter Mucha**, Georgia Institute of Technology
John A. Pelesko, Georgia Institute of Technology
John E. McCuan, Georgia Institute of Technology
Guillermo H. Goldsztein, Georgia Institute of Technology

8:00AM ► (348) *Elastic and elastoplastic response of periodic versus random composites.*
Mingxiao Jiang, General Electric Corporate R&D, **Iwona Jasiuk***, Georgia Instgitute of Technology, and **Martin Ostoja-Starzewski**, McGill University (975-74-419)

8:30AM (349) *Design of Fiber Reinforced Rods for Maximum Torsional Rigidity.*
Robert Lipton, Louisiana State University (975-49-208)

8:55AM Break.

10:10AM (350) *The strenght domain of perfectly plastic polycrystals.*
Guillermo H Goldsztein, Georgia Institute of Technology (975-74-130)

10:40AM (351) *Homogenization of a nonlinear elliptic boundary value problem modeling galvanic currents.*
Shari Moskow, University of Florida (975-35-318)

11:10AM (352) *On radial minimizers of the Ginzburg-Landau functional.*
Dmitry Golovaty*, The University of Akron, and **Leonid Berlyand**, The Pennsylvania State University (975-49-399)

11:40AM ► (353) *Statistical Models of Evolving Networks.* Preliminary report.
Peter J. Mucha, Georgia Tech (975-82-403)

Special Session on Frames, Wavelets, and Operator Theory, IV

8:00 AM – 12:30 PM **Room 211, Instructional Center**

Organizers: **Christopher E. Heil**, Georgia Institute of Technology
Yang Wang, Georgia Institute of Technology

8:00AM (354) *Orthogonal lifting: constructing new (symmetric) nonseparable orthogonal wavelets.* Preliminary report.
Eugene Belogay*, Honors College, Florida Atlantic University, and **Yang Wang**, Georgia Institute of Technology (975-42-394)

8:30AM (355) *Embeddings of Some "Classical" Banach Spaces Into Modulation Spaces.* Preliminary report.
Kasso A Okoudjou, School of Mathematics, Georgia Institute of Technology (975-46-148)

8:55AM Break.

10:10AM (356) *Affine Frames, GMRA's, and Oversampling.* Preliminary report.
Eric Weber, Texas A&M University (975-42-292)

10:40AM (357) *Some Recent Results on Wavelet Sets and Frame Sets.* Preliminary report.
David R. Larson* and **Xiaofei Zhang**, Texas A&M University (975-42-377)

11:10AM (358) *Generalized Frame Multiresolution Analysis and Frames of Translates.*
Manos Papadakis, University of Houston (975-41-153)

11:40AM (359) *Frame wavelets in subspaces of R^d.*
Xingde Dai*, **Yuanan Diao**, UNC-Charlotte, **Qing Gu**, UNC-Charlotte and East China Normal University, and **Deguang Han**, University of Central Florida (975-42-249)

12:10PM ► (360) *On the multivariate Riesz-Fejér Lemma.* Preliminary report.
Josip Derado, Kennesaw State University (975-42-352)

Special Session on Dynamic Equations on Time Scales, III

8:00 AM – 12:30 PM **Room 109, Instructional Center**

Organizers: **Martin J. Bohner**, Florida Institute of Technology
Billur Kaymakcalan, Georgia Southern University

8:00AM (361) *Hybrid Fuzzy differential Systems on Time Scale.* Preliminary report.
M Sambandham, Morehouse College (975-34-193)

8:30AM (362) *Existence of Solutions for Third and Fourth Order Boundary Value Problems on a Time Scale.* Preliminary report.
Johnny Henderson, Auburn University, and **William K.C. Yin***, LaGrange College (975-34-238)

8:55AM Break.

10:10AM (363) *On Bounds of Solutions of Dynamic Equations.* Preliminary report.
Billur Kaymakcalan, Georgia Southern University (975-34-142)

10:40AM ► (364) *Exponential Asymptotics.* Preliminary report.
Jo A Hoffacker* and **Tom Gard**, University of Georgia (975-34-159)

11:10AM (365) *On the zeros of a third degree exponential polynomial with applications to an SEIR epidemiological model with delay.*
Liancheng Wang*, Georgia Southern University, **Michael Y Li**, University of Alberta, and **Junjie Wei**, Northeast Normal University (975-37-198)

11:40AM (366) *Eigenvalues and eigenfunctions of a class of fractal Laplacians on the unit interval.*
Erik J. Bird, University of Michigan, **Sze-Man Ngai***, Georgia Southern University, and **Alexander Teplyaev**, University of California Riverside (975-45-283)

12:10PM (367) *On Inequalities, Characterization and Comparisons of the Cauchy, Gauss and Logistic Distributions.*
Broderick O. Oluyede, Georgia Southern University (975-33-230)

Special Session on Linear Algebra and Matrix Theory, IV

8:30 AM – 12:30 PM **Room 119, Instructional Center**

Organizers: **Frank J. Hall**, Georgia State University
Zhongshan Li, Georgia State University

8:30AM ► (368) *An Eigenvalue Problem Arising in the Design of 2-D Filters with Periodic Coefficients.* Preliminary report.
Mei-Qin Chen, The Citadel (975-15-282)

8:55AM Break.

10:10AM (369) *Robust solutions of matrix equations.*
Leiba Rodman*, College of William and Mary, and **Andre C. M. Ran**, Vrije Universiteit (975-15-16)

10:40AM (370) *Principal pivot transforms.*
Michael J Tsatsomeros, Washington State University (975-15-04)

11:10AM ► (371) *A unified approach to the eight versions of Fast Discrete Cosine and Sine Transforms.* Preliminary report.
Vadim Olshevsky and **Jun Wang***, Georgia State University (975-15-44)

11:40AM (372) *On finite dimensional backward shift invariant subspaces of the Arveson space.*
Vladimir Bolotnikov* and **Leiba Rodman**, College of William and Mary (975-15-22)

12:10PM (373) *On spaces of matrices containing a nonzero matrix of bounded rank.*
Shmuel Friedland, University of Illinois at Chicago (975-15-36)

Invited Address

9:05 AM – 9:55 AM **Tennebaum Auditorium, Instructional Center**

(374) *Banach space theory, sectorial operators and partial differential equations.*
Nigel J. Kalton, University of Missouri, Columbia (975-46-01)

Special Session on Banach Spaces and Their Applications, IV

10:10 AM – 11:00 AM **Room 117, Instructional Center**

Organizers: **Peter G. Casazza**, University of Missouri-Columbia
N. J. Kalton, University of Missouri-Columbia

10:10AM (375) *On global existence of a class of Ito-Volterra functional differential equations-A preliminary report.* Preliminary report.
Zephyrinus C. Okonkwo, Albany State University (975-34-213)

10:40AM ► (376) *Sampling eigenvalues in the nonself-adjoint case.*
A Boumenir, State University of West Georgia (975-42-149)

Special Session on Quantum Structures, IV

10:10 AM – 12:30 PM **Room 219, Instructional Center**

Organizers: **Alexander G. Wilce**, Juniata College
Richard J. Greechie, Louisiana Technical University

Franklin E. Schroeck, Florida Atlantic University

10:10AM (377) *Quasi-Heyting Algebras in Context.* **David Miller**, Wichita, KS (975-06-161)

10:40AM (378) *The Algebra of Effects in the Formalism of Quantum Mechanics on Phase Space as an M. V. and a Heyting Effect Algebra.* **Franklin E. Schroeck**, Univ. of Denver and Florida Atlantic Univ. (975-81-165)

11:10AM (379) *Cauchy Completions of MV-Algebras.* **Richard N. Ball***, University of Denver, **George Georgescu** and **Ioana Leustean**, University of Bucharest (975-06-147)

11:55AM Discussion

Special Session on Harmonic Analysis, IV

10:10 AM – 1:40 PM **Room 209, Instructional Center**

Organizers: **Gerd Mockenhaupt**, Georgia Institute of Technology
Michael T. Lacy, Georgia Institute of Technology
Akos Magyar, University of Georgia

10:10AM (380) *Sections of star bodies and the Fourier transform.* **Alexander Koldobsky**, University of Missouri-Columbia (975-52-55)

10:45AM (381) *Average decay of the Fourier transform and applications.* **Alex Iosevich**, University of Missouri (975-42-70)

11:20AM (382) *A discrete model for Hankel operators on the Dirichlet space.* Preliminary report. **Richard Rochberg**, Washington University (975-46-202)

11:55AM (383) *Almost orthogonality and a class of bounded bilinear pseudodifferential operators.* Preliminary report. **Arpad Benyi*** and **Rodolfo H Torres**, University of Kansas (975-42-326)

12:30PM (384) *Limits of sequences of polynomials orthogonal in Sobolev spaces.* **Xin Li**, University of Central Florida (975-43-297)

1:05PM (385) *Higher-order Hilbert-Schmidt Hankel forms on the ball.* **Sarah H Ferguson***, Wayne State University, and **Richard Rochberg**, Washington University - St. Louis (975-32-401)

Special Session on Graphs and Matroids, IV

10:10 AM – 12:30 PM **Room 205, Instructional Center**

Organizers: **James G. Oxley**, Louisiana State University
Bogdan Oporowski, Louisiana State University
Robin Thomas, Georgia Institute of Technology

10:10AM (386) *Graphs with small Ramsey numbers.* Preliminary report. **Alexandr Kostochka***, Univ. of Illinois at Urbana-Champaign, and **Benny Sudakov**, Princeton University and Institute for Advanced Study (975-05-64)

10:40AM (387) *Matching Properties in Domination Critical Graphs.* **Nawarat Ananchuen**, Silpakorn University, and **Michael D. Plummer***, Vanderbilt University (975-05-77)

11:10AM (388) *The cycle double cover conjecture and circuit decompositions.* **Matthew J DeVos**, Princeton University (975-05-164)

11:40AM (389) *Edge coloring in plane multigraphs.* **Bertrand F Guenin**, University of Waterloo (975-05-345)

12:10PM (390) *Equivalent versions of the 3-flow conjecture.* **Martin Kochol**, Slovak Academy of Sciences (975-05-251)

Special Session on Symplectic and Contact Topology, IV

10:10 AM – 12:30 PM **Room 217, Instructional Center**

Organizers: **Margaret Symington**, Georgia Institute of Technology
Gordana Matic, University of Georgia

10:10AM (391) *Symplectic topology and circle actions.* **Susan Tolman**, University of Illinois at Urbana-Champaign (975-53-250)

10:40AM (392) *Periodic Orbits of a Charge in a Magnetic Field.* Preliminary report. **Kai Cieliebak**, Mathematisches Institut, Ludwig-Maximilians-Universitaet, Muenchen, **Viktor L. Ginzburg***, University of California, Santa Cruz, **Kerman Ely**, University of Toronto, and **Cesar Niche**, University of California, Santa Cruz (975-37-281)

11:10AM (393) *Length minimizing Hamiltonian paths and Floer homology.* Preliminary report. **Ely Kerman***, University of Toronto, and **Francois Lalonde**, Universite de Montreal (975-53-382)

11:40AM (394) *A C^2-smooth counterexample to the Hamiltonian Seifert conjecture in R^4.* **Viktor L Ginzburg** and **Başak Z Gürel***, University of California, Santa Cruz (975-37-69)

12:10PM (395) *Holomorphic Curves, Hamiltonian Dynamics, and Lagrangian Embeddings.* **Klaus Mohnke**, SUNY at Stony Brook (975-53-54)

Special Session on Automated Reasoning in Mathematics and Logic, IV

10:10 AM – 12:20 PM **Room 105, Instructional Center**

Organizer: **Johan G. F. Belinfante**, Georgia Institute of Technology

10:10AM ► (396) *Mathematics in the TPTP Problem Library.* **Geoff Sutcliffe**, University of Miami (975-68-96)

10:40AM ► (397) *A Framework for Verification of Software Specifications.* **Olga Shumsky Matlin**, Argonne National Laboratory, and **Lawrence J Henschen***, Northwestern University (975-68-110)

11:10AM (398) *Semantics and Heuristics in OSHL.* Preliminary report. **Swaha Das***, **Shelby Funk** and **David A. Plaisted**, UNC Chapel Hill (975-68-94)

11:40AM (399) *The Nature of Monotonicity in Higher-Order Context-Oriented Mathematical Logic.* Preliminary report. **Damon A. Scott**, Francis Marion University (975-03-128)

NOON Discussion

Special Session on Algebraic Combinatorics, IV

10:10 AM – NOON **Room 115, Instructional Center**

Organizer: **Mihai A. Ciucu**, Georgia Institute of Technology

10:10AM *Lamplighter Random walks.*
► (400) **Richard W Kenyon**, Université Paris-Sud (975-05-98)

10:40AM (401) *Critical resonance in the non-intersecting lattice path model.*
Richard W. Kenyon, Universite Paris-Sud, and **David B. Wilson***, Microsoft Research (975-60-59)

11:10AM (402) *Optimal Multichromosomal Genome Rearrangements.*
Glenn Tesler, University of California, San Diego (975-92-290)

11:40AM (403) *Partition Analysis and the Omega Package.*
George E. Andrews, Pennsylvania State University (975-05-158)

Special Session on Probability and Combinatorics, IV

10:10 AM – NOON **Room 113, Instructional Center**

Organizers: **Russell D. Lyons**, Georgia Institute of Technology
Prasad V. Tetali, Georgia Institute of Technology

10:10AM (404) *A Markov Random Field Model of Multicasting.*
Kavita Ramanan*, Bell Labs, Lucent Technologies, **Ilze Ziedins**, University of Auckland, New Zealand, **Anirvan Sengupta** and **Partha Mitra**, Bell Labs, Lucent Technologies (975-00-274)

10:40AM (405) *Mixing time for biased card shuffling.* Preliminary report.
Itai Benjamini, Weitzmann institute, **Noam Beger**, U.C Berkeley, **Chris Hoffman**, University of Washington, and **Elchanan Mossel***, Microsoft Research (975-60-203)

11:10AM (406) *A new, probabilistic approach for heat kernel bounds.* Preliminary report.
Ben Morris, University of California, Berkeley (975-60-341)

11:40AM (407) *Decomposition, Swapping and Mean-Field Models.* Preliminary report.
Dana Randall, Georgia Tech (975-60-358)

John L. Bryant
Associate Secretary
Tallahassee, Florida