



Mathematical Association of America
Southeastern Section
85th Annual Meeting

Society for Industrial and
Applied Mathematics
Southeastern Atlantic Section
30th Annual Meeting



31 March – 1 April 2006
Auburn University
Auburn, Alabama

MAA-SE Officers

Chair, Charlotte Knotts-Zides, Wofford College

Vice Chair, Virginia Parks, Georgia Perimeter College-Clarkston

Program Chair, Tom Barr, Rhodes College

Secretary-Treasurer, Martha Abell, Georgia Southern University

Section Governor, Ben Klein, Davidson College

Section Lecturer (2005-2006), David Anderson, University of Tennessee

Newsletter Editor, Virginia Watson, Kennesaw State University

State Directors: Bruce Atkinson, Samford University (Alabama), Curtis Herink, Mercer University (Georgia), Rob Harger (High Point University (North Carolina), John Harris, Furman University (South Carolina), Jeff Knisley, East Tennessee State University (Tennessee)

SIAM-SEAS Officers

President, Debra Knisley, East Tennessee State University

Secretary-Treasurer and President-elect, Amnon J. Meir, Auburn University

Joint Conference

Mathematical Association of America, Southeastern Section
<http://www.maa.org/southeastern>
Eighty-fifth Annual Meeting

**Society for Industrial and Applied Mathematics, Southeastern
Atlantic Section**
<http://www.maths.citadel.edu/~chenm/SEASarch.html>
Thirtieth Annual Meeting

**Auburn University
Auburn, Alabama
31 March – 1 April 2006**

Sessions will be held in Parker Hall, 371 W. Roosevelt Drive and the Sciences Center Auditorium (adjacent to Parker Hall). The Friday evening reception and dinner will be at the Auburn University Hotel and Dixon Conference Center, 241 S. College Street

Thursday, 30 March

2:00-5:30 **Project NExT-SE Activities, Parker Hall 250**
7:30 pm **Math Treasure Hunt, Parker Hall 249**

Executive Committee Dinner and Meeting: Reception, 5:30pm,
Dinner, 6-7pm, Meeting, 7-10pm

Friday Morning, 31 March

7:30—4:30 **Registration, Parker Hall, II Floor**

8:30—12:00 **Project NExT-SE Activities, Parker Hall 250**

8:00—12:00 **Math Jeopardy Preliminary Round, SCA Building 101**

Institutions, participants and alternates, and sponsors
Berry College: Russell McEntyre, Daniel Murphree, Jeff Pullen,

Paula Tougaw; Ron Taylor, sponsor
Coastal Carolina University: Jayson Burak, Kamala Hunt, Anthony Franklin, Kamala Hunt, Bud Ostberg, Thomas Witt; Andrew Incognito, sponsor
Columbus State University: Jennifer Close, Angel Gaskins, Crystal Holmes, Laura Loveless; Brian Muse, sponsor
Davidson College: Bridget Cook, Aneesh Kulkarni, Daniel Orr, Sarah Rearden; Laurie Heyer, sponsor
Furman University: Mandy Crout, Michael Hull, Charity Watson, Mike Wierzbicki; John Harris, sponsor
Georgia Southern University: Thomas Brant, Laura Halmo, Daniel Linder, Adam Pekarske, Daniel Richey, William Triplett; Yan Wu, sponsor
King College: Dane Kinser, Robert McRae, Jared Newton, Dustin Pierce; Bill Linderman, sponsor
Lipscomb University: David Beaman, Sarah Beth Casey, Robby Crouch, Caleb Rucker; Gary Hall, sponsor
Methodist College: Salem Adnan, Anastasia Krikunova, Wen-Hui Ren, Xiangming Wu; Shivappa Palled, sponsor
Samford University: Braxton Carrigan, Brenna McGuffey, Chris Sharon, Karen Wilson, Nate Wilson; Emily Hynds, sponsor
University of Tennessee – Martin: Daniel Adler, Ty Elder, Gayatri Ramesh, Bryan Sandor, Nicole Gary, Amanda Hamm, Bobby Isbell, Thomas Winters; Sarah Holliday, sponsor
Western Carolina University: Brian Becker, Bridgette Boley, Jack Cheng, Anna Kamphaus, Polly Rudoff; Julie Barnes, sponsor

8:30—11:30 Short Courses

Problem-Solving with the Point-and-Click Interface in Maple 10, Robert J. Lopez (Professor Emeritus, Rose-Hulman Institute of Technology), Parker Hall 126

Cryptography, Security, and the Internet, Jeffrey Ehme (Spelman College), Parker Hall 249

Internet-based Multivariable Calculus, Tom Banchoff (Brown University), Parker Hall 224

Teaching of Statistics in High Schools, Madhuri S. Mulekar (University of South Alabama), Parker Hall 236

11:15—12:45 TA Rush/Career Fair, Parker Hall, I Floor

11:30—12:30 Lunch

Friday Afternoon, 31 March

12:40—1:50 General Session I, SCA Building 101, A. J. Meir, Secretary-Treasurer and President-elect SIAM-SEAS, presiding. Welcome and Opening Remarks by Michel Smith, Chair of Mathematics & Statistics Department, and by Marie Wooten, Associate Dean for Research at Auburn University. Invited Address: *Model Development and Control Design for Nonlinear Smart Material Systems*, Ralph C. Smith, North Carolina State University

2:00—5:15 Exhibits and refreshments, Parker Hall, II Floor

3:00—4:00 Special Presentation, *Syntax-Free Maple: An Overview of the Ease-of-Use Features in Maple 10*, Robert J. Lopez, Professor Emeritus, Rose-Hulman Institute of Technology, Maple Fellow, Maplesoft, Parker Hall 126

2:00—4:20 Special Sessions, Minisymposia, and Contributed Papers

1. Minisymposium on Optimal Control, John Burkardt, Florida State University, organizer, Parker Hall 305

2:00 1.1 *Optimal Control for an MHD System*, Catalin Trenchea, Florida State University

2:30 1.2 *Feedback Control of the Burgers Equation by CVT-based Reduced-Order Modeling*, Hyung-Chun Lee, Ajou University, Korea / Florida State University (visitor)

3:00 1.3 *Collocation for Stochastic PDE's: The Linear Case*, Raul Tempone, Florida State University

3:30 1.4 *Collocation for Stochastic PDE's: The Nonlinear Case*, Clayton Webster, Florida State University

2. Special Session on Geometry I, Andras Bezdek, Auburn University, organizer, Sciences Center Classroom 118

- 2:00** 2.1 *Functionals and the Quantum Master Equation*, Ronald O. Fulp, North Carolina State University
- 2:30** 2.2 *Visualization of Point Symmetry Groups in \mathbb{R}^1* , Jack Pace, Southern Polytechnic State University
- 3:00** 2.3 *On Iterative Processes Generating Dense Point Sets*, Gergely Ambrus, Auburn University
- 3:30** 2.4 *Teaching non-Euclidean Geometry with Euclidean Technology*, Subhash C. Saxena, Coastal Carolina University

3. Special Session on Mathematical Biology I, Laurie Heyer, Davidson College, organizer, Parker Hall 301

- 2:00** 3.1 *Bioinformatic Discovery of Co-Evolution*, Robert Hochberg, Eastern Carolina University
- 2:30** 3.2 *A Tree Decomposable Graph Model for RNA Structure Search*, Liming Cai, University of Georgia
- 3:00** 3.3 *Gene Clustering Using SGO (Semantic Gene Organizer)*, Kevin Heinrich and Michael W. Berry*, University of Tennessee, and Ramin Homayouni, University of Tennessee Health Science Center
- 3:30** 3.4 *Neural Networks, Data Mining, and Real World Neurons*, Jeff Knisley, Eastern Tennessee State University

4. Minisymposium on Algorithms and Applications of Tessellations of Spaces and Surfaces, Lili Ju, University of South Carolina, organizer, Parker Hall 319

- 2:00** 4.1 *Uniform Convergence of A Nonlinear Energy-based Multilevel Quantization Scheme via Centroidal Voronoi Tessellations*, Maria Emelianenko*, Carnegie Mellon University, Qiang Du, Pennsylvania State University
- 2:30** 4.2 *A Truly Meshfree First-order System Least-Squares Method*, Hugh MacMillan*, Clemson University, Max D. Gunzburger, Florida State University, and John Burkardt, Florida State University
- 3:00** 4.3 *Finite Element Method on the Sphere*, A. J. Meir and Necibe

Tuncer*, Auburn University

- 3:30** 4.4 *Adaptive FEM for Phase Field Simulation of Vesicle Membranes*, Jian Zhang* and Qiang Du, Pennsylvania State University

5. Special Session on Teaching Mathematics I, Chris Rodger, Auburn University and Mohammed Qazi, Tuskegee University, organizers, Parker Hall 236

- 2:00** 5.1 *A College Algebra Explanation of Linear Regression*, Richard Stephens, Tennessee Wesleyan College
- 2:20** 5.2 *A Middle School Mathematics Major Track*, John C. Mayer, University of Alabama-Birmingham
- 2:40** 5.3 *Incorporating a Critical Pedagogy of Place in the Rural Mathematics Classroom*, Jim Gleason, University of Alabama
- 3:00** 5.4 *Mathematics for Freshman Math Majors*, Wanda M. Patterson, Winston Salem State University
- 3:20** 5.5 *Vectors, Computer Art and Toy Story*, Timothy P. Chartier, Davidson College

6. Undergraduate Papers I: Applied Mathematics and Statistics, Luis Cueva-Parra and Karen O'Hara, organizers, Parker Hall 249

- 2:00** 6.1 *Occurrence of Discrepancies In Common Continuous Distributions Using a Student- t Test*, Christine Doyle* and Eric Howington, Coastal Carolina University
- 2:20** 6.2 *An Investigation of the Knotting Properties of Polypeptides*, Daniel T. Murphree*, Ken Martin, and Ron Taylor, Berry College
- 2:40** 6.3 *You Are What You Breathe: A Study of Air Toxins in Kingsport Tennessee*, Kristen Dale*, Adraea Brown, and Kyla Williams, Spelman College
- 3:00** 6.4 *Heart Rate Regulation During the Postural Change from Sitting to Standing*, Robert Benim, University of Portland, Sarah Lynn Joyner, Meredith College, Eamonn Tweedy*, North Carolina State University and Chris Vogl, Illinois Wesleyan University
- 3:20** 6.5 *Identifying Outliers in Multivariate Spatial Data*, Anthony Franklin* and Eric B. Howington, Coastal Carolina University

- 3:40 6.6 *Gambling It All Away*, Ann Gregson, Elon University
 4:00 6.7 *Sequence Motif Recognition using Artificial Neural Networks*,
 Nicholas Cain* and Laurie Heyer, Davidson College

7. Undergraduate Papers II: Graph Theory and Geometry, Luis Cueva-Parra and Karen O'Hara, organizers, Parker Hall 250

- 2:00 7.1 *4-cycle Packings of $\mathbb{K}_{1,m} - F$* , Sasha L. Logan and Thomas R. Whitt III*, Coastal Carolina University
 2:20 7.2 *Perfect Matchings: Extendability of Cartesian Product Graphs*, Christopher Sharon, Samford University
 2:40 7.3 *A Novel Countergraph Approach to Computing Ramsey Numbers*, Aneesh Kulkarni, Davidson College
 3:00 7.4 *Graph-Theoretic Models of Glucosyltransferases*, Debra Jane Knisley, Daniel Lamb* and Celia McIntosh, East Tennessee State University
 3:20 7.5 *Exploring the Outcomes of Placing an Inscribed Triangle*, Carissa Berglund, Elon College
 3:40 7.6 *Structure from Motion: A New Technique for 3-D Reconstruction*, Zachary Jones, High Point University

8. Special Session on Differential Equations, Keith Howard, Mercer University, organizer, Parker Hall 224

- 2:00 8.1 *Curves of Constant Inertia in Mechanical Systems with Symmetry*, Jeff Lawson, Western Carolina University
 2:20 8.2 *Extremal Eigenvalue Problems and Applications*, Laurie Battle, Georgia College and State University
 2:40 8.3 *Modeling the Air Conditioning System at the Macon Volunteer Clinic*, Jeff Denny and Carrie Keel, Mercer University
 3:00 8.4 *Linear Transport Models Exhibiting Hypercyclic Behavior*, Keith E. Howard, Mercer University

**9. Contributed Session on Statistics and Probability, Parker Hall 322
 Chair: Dr. Peng Zeng**

- 2:00 9.1 *Collaborative Learning in Introductory Statistics*, Aprillya

Processes Using Compensators, Kameswarrao Casukhela*, Jayalakshmi Casukhela, Ohio State University at Lima, and Hussain Elalaoui-Talibi, Tuskegee University

2:40 9.3 *Small Sample Behavior of Robust Estimators of Multivariate Location and Scatter*, Eric B. Howington, Coastal Carolina University

3:00 9.4 *On Fixed and Random Designs for Estimation with Applications and Comparisons*, Broderick Oluyede, Georgia Southern

3:20 9.5 *Measurement Errors in Generalized Poisson Regression Mode*, Mavis Pararai, Georgia Southern University

3:40 9.6 *Estimating Probability Densities from Numeric Samples*, Hoa Nguyen, Florida State University

4:00 9.7 *Estimating the Parameter of the Skewed Double Exponential Distribution*, Keshav Jagannathan, Coastal Carolina University

10. Contributed Session on Algebra and Analysis, Parker Hall 354
Chair: Dr. Tuval Foguel

2:00 10.1 *A Plethora of Algebra Examples from Rank One Matrices*,

Catherine C. Aust, Clayton State University

2:20 10.2 *Reflections of Regular Algebras*, Ellen Kirkman, Wake Forest University

2:40 10.3 *On the Class of L When Every Proper Subalgebra has Class at Most n* , S. Benz Suanmali, North Carolina State University

3:00 10.4 *An Unknotting Operation for Algebraic Knots*, Ron Taylor, Jr., Berry College, Ryan Hansen, West Virginia University and Matt Leonard, University of Wyoming

3:20 10.5 *Sagbi Bases and Multiplicative Invariants*, Mohammed Tesemma, Spelman College

3:40 10.6 *The Mean Value Theorem and Analytic Functions of a Complex Variable*, Mohammed Qazi, Tuskegee University

4:00 10.7 *A Class of Practically Nowhere Differentiable Functions on the Complex Plane*, Andrew J. Hetzel, Tennessee Tech University

11. Contributed Session on Numerical Analysis, Parker Hall 352
Chair: Dr. T. Y. Tam

2:00 11.1 *Convergence of Nonstationary Subdivision*, Baiqiao Deng,

Columbus State University

- 2:20** 11.2 *Numerical Analysis for a Linearization of a Backward Euler Scheme for a Class of Porous Medium Equations*, Koffi B. Fadimba, University of South Carolina Aiken
- 2:40** 11.3 *Discrete Variational Principle and Symplectic Numerical Methods: A Comparative Study*, Kevin Pedde, Western Carolina University
- 3:00** 11.4 *Using the Finite Element Approximation of Steklov Eigenfunctions to Solve the Laplace Equation Efficiently with Multiple Boundary Data*, Jennifer L. Wightman, Coastal Carolina University
- 3:20** 11.5 *A Fractional Step θ -Method for Convection Diffusion Problems*, John Chrispell, Clemson University

**12. Contributed Session on Teaching Mathematics I, Parker Hall 328
Chair: Dr. Herman Windham**

- 2:00** 12.1 *Some Data from the North Carolina Early Mathematics Placement Testing Program, 1997-2006*, Robert L. Bernhardt, East Carolina University
- 2:20** 12.2 *Teaching Mathematics Majors How to Write Mathematics*, Jeff Clark, Elon University
- 2:40** 12.3 *Defining Mathematical and Educational Goals in Mathematics Courses for Elementary Teachers*, Cindy Henning, Columbus State University
- 3:00** 12.4 *Solving Algebra Word Problems Using Simple Diagrams*, Debbie Bell and Cynthia Sikes, Georgia Southern University
- 3:20** 12.5 *The Effects of a Web-based program on Teaching and Learning in Calculus I*, Andrew Incognito, Coastal Carolina University
- 3:40** 12.6 *iPod@mathdemos: Mathematics in My iPod*, Lila F. Roberts, Georgia College and State University

**13. Contributed Session on Games, History, and Meta-mathematics,
Parker Hall 307
Chair: Dr. Sally Clark**

- 2:00** 13.1 *Wazir Circuits, Pick's Theorem, Counting Corners, and Parity*, Irl Bivens, Davidson College

- 2:20** 13.2 *A Knight's Tour for all Rectangular Boards with Minimum Square Removal*, Joe DeMaio, Kennesaw State University
- 2:40** 13.3 *An Update and Extension of the Prisoner's Guard Puzzle*, Tim Howard and Eugen Ionascu, Columbus State University
- 3:00** 13.4 *Three Proofs and Three Variations of the Low Down Triple Dealing Principle*, Colm Mulcahy, Spelman College
- 3:20** 13.5 *Poker Faced*, Colm Mulcahy and Jeffrey Ehme, Spelman College
- 3:40** 13.6 *Derivations of a Giant*, Gregory Goeckel, Presbyterian College
- 4:00** 13.7 *Experiencing the Awesome Beauty and Wonder of Mathematics as a Projection with the Musical Octave*, Henry and Erika Monteith

14. Contributed Papers on Linear Algebra, Celestial Mechanics, Knot Theory, Modeling, Set Theory, and Probability, Sciences Center Classroom 122

Chair: Dr. Georg Hetzer

- 2:00** 14.1 *Quadratic Inverse Eigenvalue Problems*, Charles R. Rogers, North Carolina State University
- 2:20** 14.2 *Testing Saari's Conjecture on Mechanical Systems: Examples and Counterexamples*, April Stepp, Western Carolina University
- 2:40** 14.3 *The Braid Index and Number of Seifert Circles for a Link*, Jennifer Aust, Wofford College
- 3:00** 14.4 *An Exploratory Analysis of Hazardous Air Pollutants in Mississippi*, Luvenia Hellems*, Shayla Ball, and Daana Nelson, Spelman College
- 3:20** 14.5 *A Problem Concerning Set Partitions*, Bryce Duncan, Auburn University Montgomery
- 3:40** 14.6 *Critical Values for Normal and Half-Normal Probability Plots with Application to Unreplicated Two-Level Factorial and Fractional Factorial Designs*, Charles W. Champ* and Minal Vora, Georgia Southern University

4:30—5:25 **General Session II**, SCA Building 101, Charlotte Knotts-Zides, MAA-SE Chair, presiding; Awards. Invited Address, *Can You see a Ring?*, David Anderson, University of Tennessee, Knoxville

Friday Evening, 31 March

6:30—9:00 Reception, Dinner and Entertainments, Auburn University Hotel and Dixon Conference Center, 241 South College Street, Auburn

Saturday Morning, 1 April

7:30—10:30 Registration, Parker Hall II Floor

**7:30—8:30 MAA Business Meeting, Parker Hall 319
SIAM Business Meeting, Parker Hall 305**

8:15—9:15 Math Jeopardy Final Rounds, SCA Building 101

8:00—1:00 Exhibits and refreshments, Parker Hall II Floor

9:30—10:30 General Session III, SCA Building 101, Martha Abell, Secretary-Treasurer, MAA-SE, presiding. Announcements. Invited Address, *Mathematics is not a Spectator Sport*, David Stone, Georgia Southern University

10:30 – 11:30 Department Chairs' Meeting, Charlotte Knotts-Zides, Wofford College, and Michel Smith, Auburn University, presiders, Sciences Center Classroom Building 118

11:30—12:30 Special Presentation, *The Shift from Faculty to Administration...Moving on up to the East Side or over to the Dark Side?* Larry Bouldin, Dean of Mathematics and Science, Roane State Community College, Harriman, Tennessee, facilitator/moderator. Sciences Center Classroom Building 118

**10:30 – 12:00 Undergraduate Poster Session, Tim Chartier,
Davidson College, organizer, Parker Hall II Floor**

- 15.1 *Je le vois, mais je ne le crois pas: Attempting to Understand Infinity*, Caroline Turnage, Wofford College
- 15.2 *Mastering Monopoly*, Brian Becker, Western Carolina University
- 15.3 *I'll Take the Lamborghini*, Jack Cheng, Western Carolina University
- 15.4 *Fibonacci: A History and Patterns*, James Ruff, Western Carolina University
- 15.5 *Perusing Pascal's Triangle*, Christa Conner, Western Carolina University
- 15.6 *Zero-Phobia*, Polly Rudoff, Western Carolina University
- 15.7 *The Origin of Pi*, Bridgette Boley, Western Carolina University
- 15.8 *Schrödinger's Mathematics*, Anna Kamphaus, Western Carolina University
- 15.9 *Diffraction by Double Slits*, Wen-Hui Ren, Methodist College
- 15.10 *Uniqueness of Solutions for Third Order Boundary Value Problems on a Time Scale*, Ashley Askew, Clayton State University
- 15.11 *Zero Knowledge Proof*, Tishun N. Turknett, Spelman College
- 15.12 *The Effect of Alcohol on Neuron Firing*, Charles R. Rogers, North Carolina State University
- 15.13 *Applications of Error-Correcting Codes in Cryptography*, Kina McCanns, Spelman College
- 15.14 *Bisections and Reflections: A Geometric Investigation*, Jessie Penley and Carrie Carden, Berry College
- 15.15 *Connectivity in Trees: An Investigation into the Geometric and Combinatorial Properties of Graphs Arising in Pure Mathematics*, Wesley Digh, University of North Carolina at Asheville
- 15.16 *The Duck Hunter Problem*, Sandra Gaskins, Columbus State University
- 15.17 *The Chinese Remainder Theorem and the RSA Decryption Process*, Nicole Mack, Spelman College
- 15.18 *The Light Elements and Preliminary Photometric Solution for the Binary DFLyr*, Jared Newton, King College
- 15.19 *Public Key Cryptography*, Brittany L. Mosby, Spelman College
- 15.20 *A Study of the Type I and Type II Error Rates of Tests for Species Diversity Based on Shannon's Index of Diversity*, Kristina R. Corts, Kennesaw State University

15.21 *Digital Processing and the Fourier Transform*, Victoria Frost,
Spelman College

10:30—1:00 Special Sessions, Minisymposia, and Contributed Papers

16. Minisymposium on Fluid Dynamics, Hyesuk Lee, Clemson University, organizer, Parker Hall 305

- 10:30** 16.1 *Adaptive Finite Element Methods for Elliptic PDE's Based on Conforming Centroidal Voronoi/Delaunay Triangulations*, Lili Ju, University of South Carolina
- 11:00** 16.2 *A Bounded Artificial Viscosity Large Eddy Simulation Model*, Traian Iliescu, Virginia Tech
- 11:30** 16.3 *Time Relaxation for Turbulent Flow Problems*, Monika Neda, University of Pittsburgh
- 12:00** 16.4 *Iterative Defect-Correction Strategies for Viscoelastic Fluid Flow*, Jason Howell, Clemson University

17. Special Session on Geometry, Andras Bezdek, Auburn University, organizer, Parker Hall 352

- 10:30** 17.1 *Isoperimetric Problems in the Euclidean Plane*, Michael Bleicher, Kennesaw State University
- 11:00** 17.2 *Links Between Packing and Covering*, Ed Smith, Jacksonville State University
- 11:30** 17.3 *Roof Path Curvature: Santa vs. Rudolph*, Robert Ford, Auburn University
- 12:00** 17.4 *Euclidean Geometry as a Teaching Tool*, Andras Bezdek, Auburn University

18. Special Session on Mathematical Biology II, Laurie Heyer, Davidson College, organizer, Parker Hall 249

- 10:30** 18.1 *Genomic Integrity, Environmental Cues, and Network Reduction*, Hugh R. MacMillan, Clemson University
- 11:00** 18.2 *Optimal Control Applied to a CPR Model*, Suzanne Lenhart, University of Tennessee and Oak Ridge National Laboratory

- 11:30** 18.3 *Evolution of a No-resistance Behavior*, Jan Rychtar, University of North Carolina Greensboro, and Mark Broom, University of Sussex
- 12:00** 18.4 *HIV Epidemic Model for Uganda including Education Information Campaign*, Kevin Gipson, University of Tennessee

19. Special Session on Teaching Mathematics II, Chris Rodger, Auburn University and Mohammed Qazi, Tuskegee University, organizers, Parker Hall 236

- 10:30** 19.1 *The Importance of Being Able to Add: What is the Role of Technology in the Classroom?*, Robert Jamison, Clemson University
- 10:50** 19.2 *Preparing Prospective Elementary School Teachers in Mathematics*, Cecelia Laurie, University of Alabama
- 11:10** 19.3 *Mathematics History Across the Curriculum: An Integrated Approach for Future Teachers*, B.D. Beasley, P.E. Campbell, D.S. Daniel, G.D. Goeckel, C. C. Harshaw, Presbyterian College and D.E. Schoolfield, Bell Street Middle School
- 11:30** 19.4 *Mentoring Partnerships – a First Step into Inquiry-Based Teaching*, Barry Spieler, Birmingham-Southern College and Cornelius Stallmann, Augusta State University
- 11:50** 19.5 *Preparing Students for Success in Algebra*, Steven R. Lay, Lee University
- 11:10** 19.6 *Defining Mathematical and Educational Goals in Mathematics Courses for Elementary Teachers*, Cindy Henning, Columbus State University
- 11:30** 19.7 *TEAM-Math: An Overview of a National Science Foundation Funded Partnership to Improve Mathematics Education in East-Alabama*, Chris Rodger, Auburn University and Mohammed A. Qazi, Tuskegee University

**20. Contributed Session on Number Theory and Graph Theory, Parker Hall 307
Chair: Dr. Kevin Phelps**

- 10:30** 20.1 *Rogers-Ramanujan Subpartitions and Their Connections to Other Partitions*, Louis Kolitsch, The University of Tennessee at Martin

- 10:50** 20.2 *A Direct Proof of Euler's Theorem on $1 \pmod{3}$ Primes*, Shan Manickam, Western Carolina University
- 11:10** 20.3 *Straight Talk about Large Primes*, Chris Caldwell, University of Tennessee at Martin
- 11:30** 20.4 *Further Results on Holes in $\mathbb{I}(2,1)$ Colorings on Certain Classes of Graphs*, Gilbert Eyabi* and Renu Laskar, Clemson University
- 11:50** 20.5 *On the Chromatic Number of the $AC(2, k, k-1)$ Graphs*, *Navya Arora and Debra Knisley, East Tennessee State University
- 12:10** 20.6 *A Sufficient Condition for Hamiltonicity of Graphs*, Rao Li, University of South Carolina—Aiken
- 12:30** 20.7 *A Graph Theoretic Model for Optimizing Walking Bass Lines*, Pat Rossi, Troy University

21. Contributed Session on Optimization and Applied Mathematics, Parker Hall 319
Chair: Dr. Paul Schmidt

- 10:30** 21.1 *Vacuum Formation in Multi-Dimensional Compressible Flows*, Kristen DeVault, North Carolina State University
- 11:50** 21.2 *A Markov Chain Model for Osmosis*, Steven Edwards, Southern Polytechnic State University
- 11:10** 21.3 *Evaluation and Comparison of Normalization Methods for Genomic Microarray Data*, Alexander Engau* and Margaret E. Staton, Clemson University
- 11:30** 21.4 *Parallel Implementation of Finite Element Code Using PETSc*, Jennifer Houchins, Clemson University
- 11:50** 21.5 *Math Models for Crisis Action Planning*, E. L. Perry, Faulkner University
- 12:10** 21.6 *Performance Based Decisions Under Uncertainty for Complex Systems*, Sundeep Samson and James. A. Reneke, Clemson University
- 12:30** 21.7 *Equitable Efficiency in Multiple Criteria Optimization*, Vijay K. Singh* and Michael M. Kostreva, Clemson University

22. Contributed Session on Geometry, Parker Hall 322
Chair: Dr. Mohamed Salman

- 10:30** 22.1 *Rational Vertices for Triangles Inscribed in the Unit*

- Circle*, Paul Baker, Catawba College
- 10:50** 22.2 *Parallelogons and Cutting Elliptical Cakes*, Doug Burkholder, Lenoir-Rhyne College
- 11:10** 22.3 *Parameterizations of Equilateral Triangles in Z^3* , Eugen J. Ionascu, Columbus State University
- 11:30** 22.4 *Handling Graphics in LaTeX*, Keshav Jagannathan, Coastal Carolina University
- 11:50** 22.5 *Thoughts on the Klein Model of Hyperbolic Geometry*, Richie King, Davidson College

23. Contributed Session on Modeling and Differential Equations, Parker Hall 224

Chair: Dr. Jintae Kim

- 10:30** 23.1 *Retrieving H.G.Wells from the Ocean Floor*, Andrew Simoson, King College
- 10:50** 23.2 *Modeling Self-Organization in Social Wasps*, Michael Phillips*, Istvan Karsai, and Jeff Knisley, East Tennessee State University
- 11:10** 23.3 *Different Approaches for Solving Predator-Prey Problems*, Hugh Sanders, Georgia College and State University
- 11:30** 23.4 *A Class of Integro-Differential Equations and Connections to One-Dimensional Inverse Problems*, Yilian Zhang, University of South Carolina—Aiken
- 11:50** 23.5 *Existence and Uniqueness in q -Gevrey asymptotics*, Michael Spurr and David Pravica, East Carolina University
- 12:10** 23.6 *Two-Target Approximate Control for a Linear Diffusion Equation*, Sung-Sik Kwon, North Carolina Central University, and Jon Tolle, University of North Carolina at Chapel Hill
- 12:30** 23.7 *Adapting the Parareal Algorithm to Reduce Order Models*, Chris Harden, Florida State University

24. Minisymposium on Computational Methods for Electromagnetism, Susanne Brenner and Fengyan Li, University of South Carolina, organizer, Parker Hall 301

- 10:30** 24.1 *Negative-norm Least-squares Methods for Axisymmetric Maxwell Equations*, Dylan Copeland, Texas A & M University

- 11:00** 24.2 *Convergence Analysis of Adaptive Edge Element Methods in 3-D Electromagnetic Field Computation*, Ronald H.W. Hoppe, University of Houston and University of Augsburg
- 11:30** 24.3 *Nonconforming Finite Element Methods for the Time-Harmonic Maxwell Equations*, Li-yeng Sung, Susanne C. Brenner and Fengyan Li, University of South Carolina
- 11:00** 24.4 *Advances in Wave Propagation with the Discontinuous Galerkin Method*, Tim Warburton, Rice University

25. Special Session on Graph Decompositions, Sasha Logan, Coastal Carolina University, organizer, Parker Hall 354

- 10:30** 25.1 *On Packing the Complete Bipartite Graph with 6-cycles*, Janie Kennedy*, Samford University, LaKeisha Brown and Robert Gardner, East Tennessee State University, and Gary Coker, Francis Marion University
- 10:50** 25.2 *Multidecomposition of the Complete Graph into Graph Pairs of Order 5 with Various Leaves*, Atif Abueida*, University of Dayton and Christian Hampson, Colorado State University
- 11:10** 25.3 *Coloring the Vertices of a Graph with Open Subsets of the Unit Interval*, Peter Johnson* and Christopher Rodger, Auburn University
- 11:30** 25.4 *Notes on the Villainy of a Graph*, Sarah H. Holliday*, University of Tennessee at Martin, Sally A. Clark, Birmingham-Southern College, John E. Holliday, North Georgia College and State University, Robert R. Rubalcaba, University of Alabama-Huntsville, Matt P. Walsh, Indiana University Purdue University, Peter D. Johnson, Jr. and Janet E. Trimm, Auburn University
- 11:50** 25.5 *The Shields-Harary Numbers of the Complete Bipartite Graph $K_{m,n}$ for Continuous Concave Cost Functions Vanishing at One*, John E. Holliday*, North Georgia College and State University and Peter D. Johnson, Jr, Auburn University
- 12:10** 25.6 *Efficient Multiple Domination*, Robert R. Rubalcaba* and Peter Slater, University of Alabama in Huntsville

26. Undergraduate Papers III: Algebra and Number Theory, Luis Cueva-Parra and Karen O'Hara, organizers, Parker Hall 250

- 10:30** 26.1 *Convergence of \mathbb{P} -Series Revisited and Some Applications*, Mr. Elom Abalo*, Wofford College and Kokou Abalo, Erskine College
- 10:50** 26.2 *Equivalence Classes of Matrices and the Rational Canonical Form*, Jayson Burak, Coastal Carolina University
- 11:10** 26.3 *Finding the N^{th} Term of Recursive Sequences Using Linear Algebra*, Nicholas Ostberg, Coastal Carolina University
- 11:30** 26.4 *Existence and Uniqueness of Solutions in Mini-Sudoku*, Laura Hodge and Collin Witt, Coastal Carolina University
- 11:50** 26.5 *Properties of Self-Quasi-Regularity in Certain Rings*, Allen K. Hoffmeyer, Georgia College and State University
- 12:10** 26.6 *Methods for Constructing Finite, Noncommutative Semigroups*, *Sandra Gaskins and Ronald Linton, Columbus State University
- 12:30** 26.7 *Elliptic Curves and Applications in Number Theory*, Brittany L. Mosby, Spelman College

27. Contributed Session on Teaching Mathematics II, Parker Hall 328

Chair: Dr. Bhu Dev Sharma

- 10:30** 27.1 *Applications of Mathematics using applets via Maple*, Lyndell Kerley and Jeff Knisley, East Tennessee State University
- 10:50** 27.2 *Clearing the Fog from Linear Algebra Class Using the Fundamental Theorem of Linear Algebra*, Damon Scott, Francis Marion University
- 11:10** 27.3 *Generating Enthusiasm in Precalculus and Calculus*, Karen Smith and Scott Sykes, University of West Georgia
- 11:30** 27.4 *Student Centered College Algebra*, Cornelius Stallmann, Augusta State University
- 11:50** 27.5 *accessiblemath@mathdemos: An Accessible Online Resource for Mathematics Instructors and Students*, Lila Roberts, Georgia College and State University
- 12:10** 27.6 *Teaching First-Semester Calculus Courses Using a Computer Algebra System: The Role of Lab*, Yilian Zhang, University of South Carolina—Aiken

12:30—1:15 Lunch

Saturday Afternoon, 1 April

1:15—2:15 General Session IV, SCA Building 101, Amnon J. Meir, presiding. Student Awards. Invited Address: *C⁰ Interior Penalty Methods*, Susanne Brenner, University of South Carolina

Index of Speakers and Authors

Elom Abalo, abalook@wofford.edu, UP3 26.1
Kokou Abalo, UP3 26.1
Atif Abueida, Atif.Abueida@notes.udayton.edu, SS 25.2
Gergely Ambrus, SS 2.3
David Anderson, GS 2
Navya Arora, ZNAA7@imail.etsu.edu, CS 20.5
Ashley Askew, csu15848@mail.clayton.edu, UPS 15.10
Catherine Aust, CathieAust@mail.clayton.edu, CS 10.1
Jennifer Aust, austjik@wofford.edu, UG/GP 14.3
Paul Baker, pbaker@catawba.edu, CS 22.1
Shayla Ball, UG/GP 14.4
Laurie Battle, laurie.battle@gcsu.edu, SS 8.2
B. D. Beasley, bbeasley@presby.edu, SS 19.3
Brian Becker, UPS 15.2
Debbie Bell, Debbie@georgiasouthern.edu, CS 12.4
Robert Benim, UP1 6.4
Carissa Berglund, cberglund@elon.edu, UP2 7.5
Robert Bernhardt, BERNHARDTR@ecu.edu, CS 12.1
Michael Berry, berry@cs.utk.edu, SS 3.3
Andras Bezdek, bezdean@mail.auburn.edu, SS 17.4
Irl Bivens, irbivens@davidson.edu, CS 13.1
Michael Bleicher, SS 17.1
Bridgett Boley, UPS 15.7
Larry Bouldin, SP 2
Susanne Brenner, Brenner@math.sc.edu, MS 24.3, GS 4
Mark Broom, M.Broom@sussex.ac.uk, SS 18.3
Adraea Brown, UP1 6.3

LaKeisha Brown, SS 25.1
Jayson Burak, jmburak@coastal.edu, UP3 26.2
John Burkardt, burkardt@scs.fsu.edu, MS 4.2
Douglas Burkholder, BurkholderD@lrc.edu, CS 22.2
Liming Cai, slater@math.uah.edu, SS 3.2
Nicholas Cain, niacin@davidson.edu, UP1 6.7
Chris Caldwell, Caldwell@utm.edu, CS 20.3
P. E. Campbell, pecampbell@presby.edu, SS 19.3
Carrie Carden, ccarden@students.berry.edu, UPS 15.14
Jayalakshmi Casukhela, casukhela.1@osu.edu, CS 9.2
Kameswarrao Casukhela, casukhela.2@osu.edu, CS 9.2
Charles Champ, cchamp@georgiasouthern.edu, UG/GP 14.8
Tim Chartier, tichartier@davidson.edu, SS 5.5
Jack Cheng, UPS 15.3
John Crispell, jchrisp@clemson.edu, CS 11.5
Sally Clark, sclark223@gmail.com, SS 25.4
Jeff Clark, clarkj@elon.edu, CS 12.2
Gary Coker, gcoker@fmarion.edu, SS 25.1
Crista Conner, UPS 15.5
Dylan Copeland, Copeland@math.tamu.edu, MS 24.1
Kristina Cortis, krc5451@kennesaw.edu, UPS 15.20
Kristen Dale, nshah@spelman.edu, UP1 6.3
D. S. Daniel, dsdaniel@presby.edu, SS 19.3
Joe DeMaio, jdemaio@kennesaw.edu, CS 13.2
Baiqiao Deng, deng_baiqiao@colstate.edu, CS 11.1
Jeff Denny, DENNY_JK@Mercer.edu, SS 8.3
Kristen De Vault, kjdevaul@ncsu.edu, CS 21.1
Wesley Digh, wbdigh@gmail.com, UPS 15.15
Christine Doyle, odolye59@aol.com, UP1 6.1
Qiang Du, qdu@math.pdu.edu, SS 4.1, MS 4.4
Bryce Duncan, UG/GP 14.5
Steven Edwards, sedwards@spsu.edu, CS 21.2
Jeffrey Ehme, jehme@spelman.edu, CS 13.5
Hussain Elaloui-Talibi, talibi@tuskegee.edu, CS 9.2
Maria Emelianenko, masha@cmu.edu, MS 4.1
Alexander Engau, aengau@clemson.edu, CS 21.3
Gilbert Eyabi, geyabi@clemson.edu, CS 20.4
Koffi Fadimba, Koffif@usca.edu, CS 11.2
Robert Ford, SS 17.3
Anthony Franklin, UP1 6.5
Victoria Frost, vicjag97@yahoo.com, UPS 15.21

Ronald Fulp, fulp@math.ncsu.edu, SS 2.1
Robert Gardner, gardnerr@etsu.edu, SS 25.1
Sandra Gaskins, monjambonkissedu@aol.com, UPS 15.16, UP3 26.6
Kevin Gipson, Gipson@math.utk.edu, SS 18.4
Jim Gleason, jgleason@as.ua.edu, SS 5.3
G. D. Goeckel, ggoeckel@mail.presby.edu, CS 13.6, SS 19.3
Ann Gregson, agregson@elon.edu, UP1 6.5
Max Gunzburger, gunzburg@csit.fsu.edu, MS 4.2
Christian Hampson, hampson@math.colostate.edu, SS 25.2
Ryan Hansen, rhansen@math.wvu.edu, CS 10.4
Chris Harden, charden@scs.fsu.edu, CS 23.7
C. Clint Harshaw, charshaw@presby.edu, SS 19.3
Kevin Heinrich, heinrich@cs.utk.edu, SS 3.3
Luvenia Hellems, UG/GP 14.4
Cindy Henning, henning_cindy@colstate.edu, CS 12.3, SS 19.6
Andrew J. Hetzel, AHetzel@tntech.edu, CS 10.7
Laurie Heyer, lahey@ davidson.edu, UP1 6.7
Robert Hochberg, Hochberg@diamacs.rutgers.edu, SS 3.1
Laura Hodge, aincogni@coastal.edu, UP3 26.4
Allen Hoffmeyer, jason.huffman@gcsu.edu, UP3 26.5
John E. Holliday, jeholliday@ngcsu.edu, SS 25.4, SS 25.5
Sarah H. Holliday, sholliday@utm.edu, SS 25.4
Ramin Homayouni, SS 3.3
Ronald H. W. Hoppe, rohop@math.uh.edu, MS 24.2
Jennifer Houchins, jslayer@clemsun.edu, CS 21.4
Tim Howard, thoward@colstate.edu, CS 13.3
Keith E. Howard, HOWARD_KE@Mercer.edu, SS 8.4
Jason Howell, jshowel@clemsun.edu, MS 16.4
Eric Howington, ebhowing@coastal.edu, UP1 6.1, UP1 6.5, CS 9.3
Traian Iliescu, iliescu@math.vt.edu, MS 16.2
Andrew Incognito, aincogni@coastal.edu, CS 12.5
Eugen Ionascu, ionascu_eugen@colstate.edu, CS 13.3, CS 22.3
Keshav Jagnnathan, kjaganna@coastal.edu, CS 9.7, CS 22.4
Robert Jamison, rejam@clemsun.edu, SS 19.1
Peter D. Johnson, Jr., johnspd@auburn.edu, SS 25.3, SS 25.4, SS 25.5
Zachary Jones, zjones@cs.highpoint.edu, UP2 7.6
Sarah Lynn Joyner, UP1 6.4
Lili Ju, ju@math.sc.edu, MS 16.1
Anna Kamphaus, UPS 15.8
Istvan Karsai, karsai@etsu.edu, CS 23.2
Carrie Keel, SS 8.3

Janie Kennedy, jlkenned@samford.edu; SS 25.1
Lyndell Kerley KERLEYLM@mail.etsu.edu, CS 27.1
Richie King, riking@davidson.edu, CS 22.5
Ellen Kirkman, kirkman@wfu.edu, CS 10.2
Debrah Knisley, KNISLEYD@mail.etsu.edu, UP2 7.4, CS 20.5
Jeff Knisley, KNISLEYJ@mail.etsu.edu, SS 3.4, CS 23.2, CS 27.1
Louis Kolitsch, lkolitsc@utm.edu, CS 20.1
Michael M. Kostreva, flstgla@clemson.edu, CS 21.7
Aneesh Kulkarni, ankulkarni@davidson.edu, UP2 7.3
Sung-Sik Kwon, skwon@nccu.edu, CS 23.6
Daniel Lamb, dhlamb@gmail.com, UP2 7.4
Aprillya Lanz, AprillyaLanz@mail.clayton.edu, CS 9.1
Renu Laskar, realsk@clemson.edu, CS 20.4
Cecelia Laurie, claurie@bama.au.edu, SS 19.2
Jeff Lawson, jlawson@wcu.edu, SS 8.1
Steven Lay, slay@leeunifersity.edu, SS 19.5
Hyung-Chun Lee, hcllee@scs.fsu.edu, MS 1.2
Suzanne Lenhart, lenhart@math.utk.edu, SS 18.2
Matt Leonard, wleonard@uwyo.edu, CS 10.4
Fengyan Li, fli@math.sc.edu, MS 24.3
Rao Li, raol@usca.edu, CS 20.6
Ronald Linton, linton_ronald@colstate.edu, UP3 26.6
Sasha Logan, slogan@coastal.edu, UP2 7.1
Robert J. Lopez, SP.1
Nichole Mack, NMack@spelman.edu, UPS 15.17
Hugh MacMillan, hmacmil@clemson.edu, MS 4.2, SS 18.1
Shan Manickam, mnkm@email.wcu.edu, CS 20.2
Ken Martin, kmartin@berry.edu, UP1 6.2
John Mayer, mayer@math.uab.edu, SS 5.2
Kina McCanns, KMcCanns@spelman.edu, UPS 15.13
Celia McIntosh, mcintosc@etsu.edu, UP2 7.4
A.J. Meir, MS 4.3
Erika Monteith, hmonteith@comcast.net, CS 13.7
Henry Monteith, hmonteith@comcast.net, CS 13.7
Brittnay Mosby, blmosby85@aol.com, UPS 15.19, UP3 26.7
Colm Mulchay, colm@spelman.edu, CS 13.4, CS 13.5
Daniel Murphree, dmurphree@students.berry.edu, UP1 6.2
Monika Neda, mon5+@pitt.edu, MS 16.3
Daana Nelson, UG/GP 14.4
Jared Newton, JDNewton@king.edu, UPS 15.18
Hoa Nguyen, nguyen@scs.fsu.edu, CS 9.6

Broderick Oluyede, boluyede@georgiasouthern.edu, CS 9.4
Nicholas Ostberg, ncostber@coastal.edu, UP3 26.3
Jack Pace, jpace@spsu.edu, SS 2.2
Mavis Pararai, mpararai@georgiasouthern.edu, CS 9.5
Wanda Patterson, pattersonwa@wssu.edu, SS 5.4
Kevin Pedde, kjp519@hotmail.com, CS 11.3
Jessie Penley, jpenley@students.berry.edu, UPS 15.14
E. L. Perry, dnel@elmore.rr.com, CS 21.5
Michael Phillips, mdphillips@gmail.com, CS 23.2
David Pravica, pravicad@mail.ecu.edu, CS 23.5
Mohammed Qazi, QaziMA@aol.com, CS 10.6, SS 19.7
Wen-Hui Ren, ren.wen.hui@gmail.com, UPS 15.9
James A. Reneke, reneke@clemson.edu, CS 21.6
Lila Roberts, lila.roberts@gscu.edu, CS 12.6, CS 27.5
Chris Rodger, rodgecl@auburn.edu, SS 19.7, SS 25.3
Charles Rogers, crogers@ncsu.edu, UG/GP 14.1, UPS 15.12
Pat Rossi, prossi@troy.edu, CS 20.7
Robert Rubalcaba, rubalcr@email.uah.edu, SS 25.4, SS 25.6
Polly Rudoff, UPS 15.6
James Ruff, UPS 4
Jan Rychtar, rychtar@uncg.edu, SS 18.3
Sundeep Samson, ssamson@clemson.edu, CS 21.6
Hugh Sanders, hugh.sanders@gcsu.edu, CS 23.3
Subhash Saxena, SS 2.4
D. E. Schoolfield, deschool@laurens56.k12.sc.us, SS 19.3
Damon Scott, DScott@RMarion.edu; CS 27.2
Christopher Sharon, cbsharon@samford.edu, UP2 7.2
Cynthia Sikes, cynsikes@georgiasouthern.edu, CS 12.4
Andy Simoson, ajsimoso@king.edu, CS 23.1
Vijay Singh, vs@clemson.edu, CS 21.7
Peter Slater, slater@math.uah.edu, SS 26.6
Ed Smith, SS 17.2
Karen Smith, CS 27.3
Ralph C. Smith, GS.1
Barry Spieler, bspieler@bsc.edu, SS 19.4
Michael Spurr, SPURRM@ecu.edu, CS 23.5
Cornelius Stallmann, cstallma@aug.edu, SS 19.4, CS 27.4
Margaret Staton, meg@genome.clemson.edu, CS 21.3
Richard Stephens, rstephens@twcnet.edu, SS 5.1
April Stepp, astepp@brinet.com, UG/GP14.2
David Stone, GS 3

S. Benz Suanmali, ssuanma@ncsu.edu, CS 10.3
Li-yeng Sung, sung@math.sc.edu, MS 24.3
Scott Sykes, ssykes@westga.edu, CS 27.3
Ronald Taylor, Jr., rtaylor@berry.edu, UP1 6.2, CS 10.4
Raul Tempone, rtempone@scs.fsu.edu, MS 1.3
Mohammed Tesemma, mtesemma@spelman.edu, CS 10.5
Jon Tolle, tolle@email.unc.edu, CS 23.6
Catalin Trenchea, trenchea@scs.fsu.edu, MS.1.1
Janet Trimm, trimmje@auburn.edu, SS 25.4
Necibe Tuncer, MS 4.3
Caroline Turnage, turnagecl@wofford.edu, UPS 15.1
Tishun Turnknett, a876tnikola@yahoo.com, UPS 15.11
Eamonn Tweedy, eptweedy@gmail.com, UP1 6.4
Chris Vogl, UP1 6.4
Minal Vora, mvora@georgiasouthern.edu, UG/GP 14.8
Matt Walsh, WalshM@ipfw.edu, SS 25.4
Tim Warburton, tim.warburton@gmail.com, 24.4
Clayton Webster, Webster@scs.fsu.edu, MS1.4
Thomas R. Whitt III, UP2 7.1
Jennifer Wightman, Wightman@coastal.edu, CS 11.4
Kyla Williams, UP1 6.3
Collin Witt, UP3 26.4
Jian Zhang, zhang_j@math.psu.edu, MS 4.4
Yilian Zhang, YillianZ@usca.edu, CS 23.4, CS 27.6