
Program of the Sessions

Tallahassee, Florida, March 12-13, 2004

Friday, March 12

Meeting Registration

7:30 AM – 4:30 PM Weichelt Lounge, Rovetta Business Building

Exhibit and Book Sale

7:30 AM – 4:30 PM Weichelt Lounge, Rovetta Business Building

Special Session on Modeling and Simulation of Complex Fluid Systems, I

8:00 AM – 10:50 AM Room 106, Rovetta Business Building

Organizers: **Qi Wang**, Florida State University
Mark Sussman, Florida State University
Xiaoming Wang, Iowa State University

- 8:00AM (1) *Connecting Molecular Orientation and Structure to Nano-Composite Properties.*
M. Gregory Forest*, **Xiaoyu Zheng**, University of North Carolina at Chapel Hill, **Robert Lipton**, Louisiana State University, **Qi Wang**, Florida State University, and **Ruhai Zhou**, University of North Carolina at Chapel Hill (994-76-150)
- 8:30AM (2) *The flow-phase diagram of Doi theory for sheared nematic polymers.*
▶ **Ruhai Zhou***, **M. Gregory Forest**, Univ. of North Carolina at Chapel Hill, and **Qi Wang**, Florida State Univ. (994-76-165)
- 9:00AM (3) *Structure formation and evolution in simple flows of nematic liquid crystal polymers.*
▶ **Qi Wang**, Florida State University (994-76-136)

- 9:30AM (4) *On weak shear and Poiseuille flows of nematic liquid crystalline polymers: steady structures and transient behavior.* Preliminary report.
Zhenlu Cui*, Florida State University, **M. Gregory Forest**, University of North Carolina at Chapel Hill, and **Qi Wang**, Florida State University (994-82-134)
- 10:00AM (5) *On Ericksen's Model for Nematic Liquid Crystals with Variable Degree of Orientation.*
Xiaobing Feng, The University of Tennessee (994-65-26)
- 10:30AM (6) *Grain boundary motion for lamellar structures of a diblock copolymer under oscillatory shear flow.*
Zhi-Feng Huang* and **Jorge Vinals**, School of Computational Science and Information Technology, Florida State University (994-76-104)

Session for Contributed Papers

8:15 AM – 10:55 AM Room 102, Rovetta Business Building

- 8:15AM (7) *(p, p)-mapping properties for oscillatory integrals.* Preliminary report.
G. Sampson, Auburn University (994-42-03)
- 8:30AM (8) *An L^p theory for differential equations in Banach spaces.*
Eduardo V. O. Teixeira, The University of Texas at Austin (994-46-10)
- 8:45AM (9) *On the behavior of weak convergence under nonlinearities and applications.*
Eduardo V. O. Teixeira and **Diego R. Moreira***, University of Texas at Austin (994-46-11)
- 9:00AM (10) *Pricing American Options via Monte Carlo: A Variance Reduction Techniques.*
Tracey Andrew Tullie, North Carolina A&T University (994-90-44)
- 9:15AM (11) *Boolean Rank and Minimum Rank of Nonnegative Sign Pattern Matrices.*
▶ **Frank J Hall**, Georgia State University (994-15-34)

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 25, 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.

- 9:30AM *Genetic Algorithm for Constrained Optimization.*
(12) Preliminary report.
M Sun* and **D. Bunnag**, The University of Alabama (994-49-53)
- 9:45AM *On 3×3 Orthogonal Matrices with no Zero Entries*
▶ (13) (Preliminary Report). Preliminary report.
Michael E Holcomb, Emory and Henry College (994-15-80)
- 10:00AM *Well ordered subsets of the real line.*
▶ (14) **David A Rose***, **Shi Broadwell** and **Stephen C Mitchell**, Florida Southern College (994-54-143)
- 10:15AM *A Domain-Decomposition Algorithm for Convection-Diffusion Equations.*
▶ (15) **Jayathi Raghavan**, Embry-Riddle Aeronautical University (994-65-188)
- 10:30AM *Fourier coefficients of the eigenfunction expansions for direct sum differential operators.*
▶ (16) **Maksim S. Sokolov**, National University of Uzbekistan (994-47-31)
- 10:45AM *On the contemporary technologies of creating of electronic libraries for IT students and mathematicians.*
▶ (17) **Paul G Shlyonsky**, National University of Uzbekistan (994-97-38)

- 10:00AM *Local structure of knot space near ropelength-minimized knots.* Preliminary report.
▶ (26) **Kenneth Millett**, University of California, Santa Barbara, **Michael Piatek** and **Eric Rawdon***, Duquesne University (994-57-76)
- 10:30AM *Implementing the Gradient of Ropelength.*
▶ (27) Preliminary report.
Michael Piatek*, **Eric Rawdon**, Duquesne University, and **Jason Cantarella**, University of Georgia (994-74-67)

Special Session on Robert Gilmer and Joe Mott: Forty Years of Commutative Ring Theory at Florida State University, I

8:30 AM – 10:50 AM Room 206, Rovetta Business Building

Organizers: **William J. Heinzer**, Purdue University
James W. Brewer, Florida Atlantic University

- 8:30AM *Invertibility of the content of a Gaussian polynomial.* Preliminary report.
(28) **Thomas G Lucas**, University of North Carolina Charlotte (994-13-14)
- 9:00AM *Condensed Rings with Zero-Divisors.*
(29) **D. D. Anderson***, The University of Iowa, and **Tiberiu Dumitrescu**, Universitatea Bucuresti (994-13-33)
- 9:30AM *On chain morphisms of commutative rings.*
(30) **David E Dobbs***, University of Tennessee, and **Andrew J Hetzel**, University of Louisiana at Monroe (994-13-22)
- 10:00AM *Divisorial elements in lattice-ordered monoids.*
(31) Preliminary report.
Laszlo Fuchs*, Tulane University, **Niovi Kehayopulu**, University of Athens, Greece, **Raquel Reis**, Universidade Aberta, Portugal, and **Michael Tsingelis**, University of Athens, Greece (994-06-30)
- 10:30AM *Star operations and pullbacks.* Preliminary report.
(32) **Marco Fontana***, Università degli Studi "Roma Tre", and **Mi Hee Park**, Korea Institute for Advanced Study (994-13-43)

Special Session on Geometric Topology in Honor of John Bryant, I

8:30 AM – 10:50 AM Room 204, Rovetta Business Building

Organizers: **Washington Mio**, Florida State University

Erik K. Pedersen, Binghamton University (SUNY)

- 8:30AM *Recognizing open subsets of S^1 .* Preliminary report.
(33) **Diarmuid J Crowley**, Penn State University, and **Steven C Ferry***, Rutgers University (994-57-172)
- 9:30AM *Representing 2-knot groups.* Preliminary report.
(34) **Gerard A Venema**, Calvin College (994-57-200)
- 10:00AM *2-Dimensional Axiomatic Geometry Revisited.*
▶ (35) Preliminary report.
Fredric D Ancel, University of Wisconsin - Milwaukee (994-51-189)
- 10:30AM *Embedding of Coxeter groups in a product of trees.*
(36) Preliminary report.
Alexander N Dranishnikov, University of Florida (994-51-81)

Special Session on Syzygies and Hilbert Functions, I

8:30 AM – 10:50 AM Room 108, Rovetta Business Building

Organizers: **Irena Peeva**, Cornell University
Christopher A. Francisco, Cornell University

- 8:30AM *On the projective dimension of three cubics.*
▶ (18) Preliminary report.
Bahman Engheta, University of Kansas (994-13-118)
- 9:00AM *The HomAB Problem.*
(19) **Kia Dalili**, Rutgers University (994-13-73)
- 9:30AM *Poincare sries of surface singularities.*
(20) **Steven D Cutkosky**, Univ. of Missouri (994-14-83)
- 10:00AM *Endomorphism rings of finite global dimension.*
(21) Preliminary report.
Graham J Leuschke, University of Toronto (994-13-99)
- 10:30AM *Multiplicity Bounds.* Preliminary report.
(22) **Hema Srinivasan**, University of Missouri (994-13-174)

Special Session on Knot Theory and Applications, I

8:30 AM – 10:50 AM Room 202, Rovetta Business Building

Organizer: **Yuanan Diao**, University of North Carolina at Charlotte

- 8:30AM *A Fast Algorithm for Computing Ropelength.*
▶ (23) Preliminary report.
Jason H Cantarella* and **Ted Ashton**, University of Georgia (994-52-144)
- 9:00AM *Quadriseccants Give New Lower Bounds for Ropelength of a Knot.*
(24) **Elizabeth J. Denne***, University of Illinois at Urbana-Champaign, **Yuanan Diao**, University of North Carolina Charlotte, and **John M. Sullivan**, Technische Universität Berlin (994-57-84)
- 9:30AM *Semidifferential topology and the ropelength problem.* Preliminary report.
▶ (25) **Joseph HG Fu**, University of Georgia (994-49-148)

Special Session on Algebraic Geometry and Topology, I

8:45 AM – 10:45 AM Room 205, Rovetta Business Building

Organizers: **Eriko Hironaka**, Florida State University
Paolo Aluffi, Florida State University
Ettore Aldrovandi, Florida State University

- 8:45AM *Mahler measures of Alexander polynomials.*
 (37) **Daniel S Silver** and **Susan G Williams***, University of South Alabama (994-58-149)
- 9:30AM *Links and Lehmer's Question.* Preliminary report.
 (38) **Daniel S Silver*** and **Susan G Williams**, University of South Alabama (994-57-153)
- 10:15AM *New arithmetic invariants of hyperbolic 3-manifolds.* Preliminary report.
 ▶ (39) **Igor V Nikolaev**, Calgary (994-11-78)

Special Session on Financial Mathematics, I

9:00 AM – 10:50 AM Room 103, Rovetta Business Building

Organizers: **Alec N. Kercheval**, Florida State University
Warren D. Nichols, Florida State University
Craig A. Nolder, Florida State University

- 9:00AM *Continuous-Time Mean-Variance Portfolio Selection with Bankruptcy Prohibition.*
 ▶ (40) **Tomasz R. Bielecki***, Illinois Institute, **Hanqing Jin**, Department of Systems Engineering and Engineering, The Chinese University of Hong Kong, **Stanley R. Pliska**, Department of Finance, University of Illinois at Chicago, and **Xun-Yu Zhou**, Department of Systems Engineering and Engineering, The Chinese University of Hong Kong (994-93-145)
- 9:30AM *Optimal portfolio choice in bond markets.*
 (41) **Michael R. Tehranchi**, University of Texas at Austin (994-60-109)
- 10:00AM *Portfolio Optimization under Budget Constraints.* Preliminary report.
 (42) **Kiseop Lee***, University of Louisville, and **Andrew E.B. Lim**, University of California, Berkeley (994-60-19)
- 10:30AM *A Sample-Path Approach to Optimal Position Liquidation.* Preliminary report.
 (43) **Paul Krokhmal*** and **Stan Uryasev**, University of Florida (994-90-63)

Special Session on Results in 3-Manifolds and Related Topics, I

9:00 AM – 10:50 AM Room 203, Rovetta Business Building

Organizers: **Wolfgang H. Heil**, Florida State University
Sergio R. Fenley, Florida State University

- 9:00AM *Tameness of hyperbolic 3-manifolds.*
 (44) **Ian Agol**, University of Illinois at Chicago (994-57-86)
- 9:30AM *Quasi-Fuchsian immersions in cusped hyperbolic 3-manifolds.* Preliminary report.
 (45) **Joseph D Masters*** and **Xingru Zhang**, SUNY Buffalo (994-57-205)

- 10:00AM *LERF and tameness.*
 (46) **Darren Long**, UCSB, and **Alan W Reid***, University of Texas at Austin (994-57-62)
- 10:30AM *Finite quotients of rings and applications to subgroup separability of linear groups.*
 (47) **Emily Hamilton**, Emory University (994-57-135)

Special Session on Harmonic Analysis, I

9:00 AM – 10:50 AM Room 207, Rovetta Business Building

Organizers: **Daniel M. Oberlin**, Florida State University
Laura de Carli, Florida International University

- 9:00AM *A new homotopy operator for differential forms in Lipschitz domains and applications to boundary problems.*
 ▶ (48) **Marius S Mitrea**, University of Missouri (994-31-164)
- 9:30AM *Parabolic layer potentials and initial boundary value problems in Lipschitz cylinders with data in Besov spaces.* Preliminary report.
 (49) **Tunde D Jakab**, University of Missouri - Columbia (994-35-82)
- 10:00AM *Maximal function estimates for a modified KP equation.* Preliminary report.
 (50) **Sarah N Ziesler***, Dominican University, and **Carlos E Kenig**, University of Chicago (994-42-72)
- 10:30AM *Some remarks on unique continuation.* Preliminary report.
 ▶ (51) **Steve M Hudson*** and **Laura De Carli**, Florida International University (994-42-103)

Invited Address

11:00 AM – NOON Moore Auditorium

- 11:00AM Welcoming remarks.
 (52) *Logistic nonlinearities in population dynamics.*
Glenn F. Webb, Vanderbilt University (994-92-06)

Invited Address

1:30 PM – 2:20 PM Room 101, Rovetta Business Building

- (53) *Surfaces in hyperbolic 3-manifolds.*
Yair Minsky, Yale University (994-57-07)

Special Session on Syzygies and Hilbert Functions, II

2:30 PM – 5:50 PM Room 108, Rovetta Business Building

Organizers: **Irena Peeva**, Cornell University
Christopher A. Francisco, Cornell University

- 2:30PM *Syzygies of Projective Toric Varieties.*
 (54) **Gregory G Smith***, Barnard College, Columbia University, and **Hal Schenck**, Texas A&M University (994-14-113)
- 3:00PM *Polytopal initial ideals for Gorenstein rings.* Preliminary report.
 (55) **Volkmar Welker**, Philipps-Universität Marburg (994-13-39)
- 3:30PM *Projective algebraic sets of minimal degree.*
 (56) **David Eisenbud**, UC Berkeley, **Mark Green**, UCLA, **Klaus Hulek**, University of Hannover, and **Sorin Popescu***, SUNY at Stony Brook (994-14-198)

- 4:00PM (57) *On the Hilbert function and the minimal free resolution of a relatively compressed level algebra.* Preliminary report.
Juan C. Migliore*, University of Notre Dame, **Rosa M. Miro-Roig**, University of Barcelona, and **Uwe Nagel**, University of Kentucky (994-13-61)
- 4:30PM (58) *More on the Lex Plus Powers Conjecture.* Preliminary report.
Ben Richert, California Polytechnic State University (994-13-122)
- 5:00PM (59) *The Pinched Veronese is Koszul.*
Giulio Caviglia, University of Kansas (994-13-102)
- 5:30PM (60) *Matroids and the structure of multigraded modules.*
A Tchernev, University at Albany, SUNY (994-13-90)

- 5:00PM (70) *Distribution of knots in lattice polygons.* Preliminary report.
Stuart G Whittington, University of Toronto (994-57-27)
- 5:30PM (71) *How long is a knot in a polymer ?*
Enzo Orlandini*, **Boris Marcone**, **Attilio L. Stella** and **Francesco Zonta**, INFN-Dipartimento di Fisica, Universita' di Padova (994-82-167)

Special Session on Results in 3-Manifolds and Related Topics, II

2:30 PM – 4:50 PM Room 203, Rovetta Business Building

Organizers: **Wolfgang H. Heil**, Florida State University
Sergio R. Fenley, Florida State University

- 2:30PM (72) *Unknotting number 1 knots with non-trivial characteristic toric splitting.* Preliminary report.
Cameron McA Gordon* and **John E Luecke**, University of Texas at Austin (994-57-154)
- 3:00PM (73) *Remarks on 2-universal links.*
Victor Núñez, CIMAT (994-57-140)
- 3:30PM (74) *Constructing knots with trivial mapping class group in closed, orientable 3-manifolds.* Preliminary report.
Robert Myers, Oklahoma State University (994-57-119)
- 4:00PM (75) *Classifying orientation reversing actions on lens spaces.* Preliminary report.
John Kalliongis*, Saint Louis University, and **Andy Miller**, University of Oklahoma (994-57-47)
- 4:30PM (76) *The Smale Conjecture for Elliptic 3-manifolds.*
Sungbok Hong, Korea University, **Darryl McCullough***, University of Oklahoma, and **J. H. Rubinstein**, University of Melbourne (994-57-51)

Special Session on Robert Gilmer and Joe Mott: Forty Years of Commutative Ring Theory at Florida State University, II

2:30 PM – 5:50 PM Room 206, Rovetta Business Building

Organizers: **William J. Heinzer**, Purdue University
James W. Brewer, Florida Atlantic University

- 2:30PM (77) *t-Splitting Multiplicative Sets of Ideals in Integral Domains.*
G W Chang, University of Incheon, **Tiberiu Dumitrescu**, Universitatea Bucuresti, and **Muhammad Zafrullah***, Idaho State University (994-13-50)
- 3:00PM (78) *Splitting Sets.* Preliminary report.
David F Anderson, University of Tennessee (994-13-54)
- 3:30PM (79) *Irreducibles and Elasticity in the Block Monoid $B(S,G)$ for a Cyclic Group G .* Preliminary report.
William W. Smith, University of North Carolina at Chapel Hill (994-13-59)
- 4:00PM (80) *On the irreducible elements of $\text{Int}(D)$ when D is a UFD.* Preliminary report.
Scott T Chapman, Trinity University (994-12-66)
- 4:30PM (81) *Socles of local cohomology modules.*
Tom Marley*, University of Nebraska-Lincoln, and **Janet Vassilev**, University of Arkansas (994-13-71)
- 5:00PM (82) *On Polynomial Equivalence.*
S. B. Mulay, University of Tennessee, Knoxville (994-13-98)

Special Session on Financial Mathematics, II

2:30 PM – 4:20 PM Room 103, Rovetta Business Building

Organizers: **Alec N. Kercheval**, Florida State University
Warren D. Nichols, Florida State University
Craig A. Nolder, Florida State University

- 2:30PM (61) *Derivative Pricing with Selfsimilar Additive Processes.* Preliminary report.
Craig A. Nolder* and **Mack Galloway**, Florida State University (994-60-158)
- 3:00PM (62) *Pricing of Options in Stock Price Models driven by Lévy Processes.* Preliminary report.
Frank Oertel, Department T - Mathematics and Physics, Zurich University (994-60-49)
- 3:30PM (63) *Nonparametric estimation of asset price models driven by pure-jump Lévy processes.* Preliminary report.
Jose E Figueroa-Lopez, Georgia Institute of Technology (994-60-206)
- 4:00PM (64) *The pricing of a Callable Call on a Forward price.*
Luis Hernandez, Georgia Institute of Technology (994-65-194)

Special Session on Knot Theory and Applications, II

2:30 PM – 5:50 PM Room 202, Rovetta Business Building

Organizer: **Yuanan Diao**, University of North Carolina at Charlotte

- 2:30PM (65) *Topological entanglement of a random θ -curve through knots and links.* Preliminary report.
Tetsuo Deguchi, Department of Physics, Ochanomizu University (994-82-125)
- 3:00PM (66) *Knots in Linear Random Walks.*
Kenneth C Millett, University of California, Santa Barbara (994-57-181)
- 3:30PM (67) *Knot complexity and the probability of random knotting.*
Miyuki K. Shimamura* and **Tetsuo Deguchi**, Japan (994-65-79)
- 4:00PM (68) *Random Knotting of self-avoiding polygons on \mathbb{Z}^3 .* Preliminary report.
Christine E Soteros, Univ. of Saskatchewan (994-05-184)
- 4:30PM (69) *The Probability of Knotting after a Local Strand Passage in an Unknotted SAP.*
M. L. Szafron*, Department of Mathematics and Statistics, University of Saskatchewan, and **C. E. Soteros**, The Mathematical Sciences Group, University of Saskatchewan (994-82-147)

- 5:30PM (83) *Integral Closures of Ideals in Completions of Regular Local Domains.*
William Heinzer, Purdue University, **Christel Rotthaus**, Michigan State University, and **Sylvia Wiegand***, University of Nebraska (994-13-107)

Special Session on Algebraic Geometry and Topology, II

2:30 PM – 5:15 PM Room 205, Rovetta Business Building

Organizers: **Eriko Hironaka**, Florida State University
Paolo Aluffi, Florida State University
Ettore Aldrovandi, Florida State University

- 2:30PM (84) *The Hodge theory of algebraic maps.*
Mark Andrea Antonio de Cataldo*, SUNY at Stony Brook, and **Luca Migliorini**, University of Bologna (994-14-95)
- 3:15PM (85) *Toric Koszul Duality.* Preliminary report.
Tom Braden*, UMass, Amherst, and **Valery Lunts**, Indiana University (994-14-56)
- 4:00PM (86) *Milnor Monodromy in the Perverse Category.*
David B Massey, Northeastern University (994-32-112)
- 4:45PM (87) *Calogero-Moser and KP systems.*
David Ben-Zvi*, University of Texas, Austin, and **Thomas Nevins**, University of Michigan (994-14-123)

Special Session on Geometric Topology in Honor of John Bryant, II

2:30 PM – 5:30 PM Room 204, Rovetta Business Building

Organizers: **Washington Mio**, Florida State University
Erik K. Pedersen, Binghamton University (SUNY)

- 2:30PM (88) *Generalized manifolds - examples, techniques, antecedents and main developments.* Preliminary report.
Robert J. Daverman, University of Tennessee (994-57-177)
- 3:30PM (89) *The quadratic form $E_8 \times T^{2n}$ used to construct exotic homology manifolds.*
Andrew A. Ranicki, University of Edinburgh (994-57-60)
- 4:00PM (90) *The Cell-like Approximation Theorem in Dimension 5.* Preliminary report.
Denise M. Halverson*, Brigham Young University, and **Robert J. Daverman**, University of Tennessee (994-57-190)
- 4:30PM (91) *Colored finite type invariants and a multi-variable analogue of the Conway polynomial.*
Sergey A Melikhov, University of Florida (994-57-124)
- 5:00PM (92) *What groups can be the fundamental group if a compact Hausdorff space?* Preliminary report.
James E Keesling* and **Yuli Rudyak**, University of Florida (994-54-191)

Special Session on Modeling and Simulation of Complex Fluid Systems, II

2:30 PM – 5:20 PM Room 106, Rovetta Business Building

Organizers: **Qi Wang**, Florida State University
Mark Sussman, Florida State University

- 2:30PM (93) *Some new results on elastic fluids.* Preliminary report.
Chun Liu, Penn State University (994-35-20)
- 3:00PM (94) *CVT reduced-order modeling for fluid flow systems.*
John Burkardt, **Max Gunzburger***, Florida State University, and **Hyung-Chun Lee**, Ajou University, Korea (994-65-126)
- 3:30PM (95) *Moment closure for a two dimensional complex fluid model.*
Qiang Du, **Chun Liu** and **Peng Yu***, Penn State University (994-76-15)
- 4:00PM (96) *Adaptive simulation of 3d non-newtonian bubble and drop dynamics.*
Mark M Sussman*, Florida State University, and **Mitsuhiro Ohta**, Muroran Institute of Technology (994-65-166)
- 4:30PM (97) *Localization of Bose-Einstein Condensate in a Two-Dimensional Optical Lattice.*
Ziad H Musslimani, University of Central Florida (994-35-24)
- 5:00PM (98) *The role of volume and surface measure in statistical models of multiphase flow.* Preliminary report.
Shankar Subramaniam, Iowa State University (994-76-152)

Special Session on Partial Differential Equations and Turbulence (dedicated to the memory of Olga A. Ladyzhenskaya), I

2:30 PM – 5:25 PM Room 208, Rovetta Business Building

Organizer: **Xiaoming Wang**, Florida State University and Iowa State University

- 2:30PM (99) *Spatial complexity of solutions of the Kuramoto-Sivashinsky equation.*
Igor Kukavica, University of Southern California (994-35-182)
- 3:00PM (100) *The 2D quasi-geostrophic equation with critical or super-critical dissipation.*
Jiahong Wu, Oklahoma State University (994-35-36)
- 3:30PM (101) *On the Dissipative 2D Quasi-Geostrophic Equations.*
Ning Ju, Oklahoma State University (994-35-186)
- 4:00PM (102) *Channel Flow Due To A Concentrated Nonlinear Source.*
C. Y. Chan, University of Louisiana at Lafayette (994-35-57)
- 4:30PM Discussion.
- 5:00PM (103) *Schrodinger maps with strong potentials.*
Jalal Shatah, New York University, and **Chongchun Zeng***, University of Virginia (994-35-35)

Special Session on Harmonic Analysis, II

3:00 PM – 5:30 PM Room 207, Rovetta Business Building

Organizers: **Daniel M. Oberlin**, Florida State University
Laura de Carli, Florida International University

- 3:00PM (104) *Some recent applications of Carleman estimates.* Preliminary report.
Carlos E Kenig, University of Chicago and Institute for Advanced Study (994-42-117)
- 3:30PM (105) *Estimates for null forms.* Preliminary report.
Atanas Stefanov and **Rodolfo H. Torres***, University of Kansas (994-42-94)

- 4:00PM (106) *The Poisson problem with optimal Besov and Triebel-Lizorkin estimates on non-smooth domains.* Preliminary report.
Svitlana Mayboroda, University of Missouri-Columbia (994-35-155)
- 4:30PM Discussions.

Florida State University Department of Mathematics Reception

6:00 PM – 8:00 PM Courtyard, Moore Auditorium

Saturday, March 13

Meeting Registration

7:30 AM – NOON Weichelt Lounge, Rovetta Business Building

Exhibit and Book Sale

7:30 AM – NOON Weichelt Lounge, Rovetta Business Building

Special Session on Syzygies and Hilbert Functions, III

8:00 AM – 10:50 AM Room 108, Rovetta Business Building

Organizers: **Irena Peeva**, Cornell University
Christopher A. Francisco, Cornell University

- 8:00AM (107) *Gorenstein projective dimension, Tate and Vogel cohomology for complexes.*
Oana Veliche, Purdue University (994-18-96)
- 8:30AM (108) *Classes of Gorenstein rings defined via vanishing cohomology.*
David A. Jorgensen*, University of Texas at Arlington, and **Liana M. Sega**, Michigan State University (994-13-110)
- 9:00AM (109) *The set of semidualizing complexes is a metric space.* Preliminary report.
Sean Sather-Wagstaff*, University of Illinois at Urbana-Champaign, and **Anders Frankild**, University of Copenhagen (994-13-40)
- 9:30AM (110) *Sally modules of m -primary ideals in local rings.* Preliminary report.
Alberto Corso, University of Kentucky (994-13-141)
- 10:00AM (111) *A bound on the first Hilbert coefficient.* Preliminary report.
Claudia Polini, University of Notre Dame (994-13-106)
- 10:30AM (112) *Rees algebras of the modules of cycles in a Koszul complex.*
Jerzy M Weyman, Northeastern University (994-13-111)

Special Session on Knot Theory and Applications, III

8:00 AM – 10:50 AM Room 202, Rovetta Business Building

Organizer: **Yuanan Diao**, University of North Carolina at Charlotte

- 8:00AM (113) *Solving Tangle Equations with KnotPlot.*
Isabel K Darcy*, University of Iowa, **Robert G Scharein**, Simon Fraser University, and **Stephen D Levene**, University of Texas at Dallas (994-92-193)

- 8:30AM (114) *A comparison between the scaling of the average crossing number ACN of equilateral random polygons with the corresponding ACN scaling observed in native proteins.*
Akos Dobay*, Laboratory of Ultrastructural Analysis, University of Lausanne, **Yuanan Diao**, University of North Carolina, **Kenneth Millett**, University of California Santa Barbara, **Rob Kusner**, University of Massachusetts at Amherst, and **Andrzej Stasiak**, Laboratory of Ultrastructural Analysis, University of Lausanne (994-65-85)
- 9:00AM (115) *Connectivity and shape of spaces of knots.* Preliminary report.
Alessandro Flammini, SISSA, Trieste, Italy, and **Andrzej Stasiak***, University of Lausanne (994-54-46)
- 9:30AM (116) *Unknotting by Type II Topoisomerases.* Preliminary report.
Jennifer K Mann*, Florida State University, **Richard W Deibler**, Harvard Medical School, **De Witt L Summers**, Florida State University, and **E. Lynn Zechiedrich**, Baylor College of Medicine (994-92-187)
- 10:00AM (117) *Colorability and n -string Tangles.*
Junalyn P. Navarra-Madsen*, UT-Dallas, and **Isabel K. Darcy**, University of Iowa (994-92-37)
- 10:30AM (118) *Generating Large Random Knot Projections.* Preliminary report.
Claus Ernst*, Western Kentucky University, **Yuanan Diao**, University of North Carolina at Charlotte, and **Uta Ziegler**, Western Kentucky University (994-55-162)

Special Session on Partial Differential Equations and Turbulence (dedicated to the memory of Olga A. Ladyzhenskaya), II

8:00 AM – 10:55 AM Room 208, Rovetta Business Building

Organizer: **Xiaoming Wang**, Florida State University and Iowa State University

- 8:00AM (119) *Optical turbulence in shear flows of nematic liquid crystal polymers.*
Qi Wang, Florida State University (994-76-137)
- 8:30AM (120) *On Viscoelastic Fluids.* Preliminary report.
Chun Liu, PSU (994-35-69)
- 9:00AM (121) *Homogenized Transport by a Spatiotemporal Mean Flow with Small-Scale Periodic Fluctuations.*
Grigorios A. Pavliotis, University of Warwick, and **Peter R Kramer***, Rensselaer Polytechnic Institute (994-76-128)
- 9:30AM (122) *Statistically Relevant Conserved Quantities in Systems with Conservation Laws.*
Rafail V. Abramov* and **Andrew J. Majda**, Courant Institute of Mathematical Sciences/Center for Atmospheric Ocean Science, New York University (994-35-32)
- 10:00AM (123) *Resonances, Renormalization Groups, and Wave Turbulence.*
David Cai, Courant Institute (994-35-199)
- 10:30AM (124) *Bifurcation and Stability of Rayleigh-Benard Convection.*
Tian Ma and **Shouhong Wang***, Indiana University (994-35-132)

Special Session on Applications of Mathematics to Problems in Biology, I

8:30 AM – 10:50 AM Room 102, Rovetta Business Building

Organizers: **Richard Bertram**, Florida State University
Jack Quine, Florida State University

- 8:30AM **►** (125) *Mathematical Formalism of Pulse Sequences in Nuclear Magnetic Resonance*. Preliminary report. **P. Srinivasan***, **J. R. Quine**, Florida State University, and **Zhehong Gan**, National High Magnetic Field Laboratory (994-92-179)
- 9:00AM **►** (126) *Structure Determination of Membrane Proteins using Discrete Frenet Frames and Solid-State NMR restraints*. Preliminary report. **Achuthan Srisairam*** and **Jack Quine**, FSU (994-92-121)
- 9:30AM (127) *Graphical Models and Independent Components - A Unifying Paradigm for Model-Free Functional MRI*. **Anke Meyer-Baese**, FSU (994-62-196)
- 10:00AM **►** (128) *Applications of the Poisson-Boltzmann Equation in Molecular Biophysics*. Preliminary report. **Marcia O Fenley***, Florida State University, and **Alexander H Boschitsch**, Continuum Dynamics, Inc. (994-92-197)
- 10:30AM **►** (129) *Membrane Protein Refinement Techniques Using Molecular Dynamics and Monte Carlo Methods*. **Thomas M Asbury**, Florida State University (994-92-77)

Special Session on Geometric Topology in Honor of John Bryant, III

8:30 AM – 10:50 AM Room 204, Rovetta Business Building

Organizers: **Washington Mio**, Florida State University
Erik K. Pedersen, Binghamton University (SUNY)

- 8:30AM (130) *Smoothing loop spaces*. **Erik K. Pedersen***, Binghamton University, **Tilman Bauer**, University of Münster, **N. Kitchloo**, Johns Hopkins University, and **D. Notbohm**, Leicester University (994-57-75)
- 9:30AM (131) *Manifolds with nonstable fundamental groups at infinity*. Preliminary report. **Craig R Guilbault***, University of Wisconsin-Milwaukee, and **Frederick C Tinsley**, The Colorado College (994-57-156)
- 10:00AM (132) *Weighted L^2 -cohomology of Coxeter groups*. **M W Davis**, The Ohio State University, **J Dymara**, Wroclaw University, **T Januszkiewicz**, The Ohio State University, and **B Okun***, University of Wisconsin-Milwaukee (994-55-170)
- 10:30AM (133) *Some examples of free actions of products of Spheres*. **Ian Hambleton**, McMaster University (994-57-171)

Special Session on Algebraic Geometry and Topology, III

8:45 AM – 10:45 AM Room 205, Rovetta Business Building

Organizers: **Eriko Hironaka**, Florida State University
Paolo Aluffi, Florida State University
Ettore Aldrovandi, Florida State University

- 8:45AM (134) *On the growth of hyperbolic Coxeter groups*. **Ruth Kellerhals**, University of Fribourg (994-22-68)

- 9:30AM (135) *On groups generated by two positive multi-twists*. **Chris Leininger**, Columbia University (994-51-12)

- 10:15AM (136) *Presentation of orbifolds and equivariant algebraic topology*. Preliminary report. **David S Metzler***, University of Florida, and **Andre Henriques**, Massachusetts Institute of Technology (994-55-127)

Special Session on Financial Mathematics, III

9:00 AM – 10:50 AM Room 103, Rovetta Business Building

Organizers: **Alec N. Kercheval**, Florida State University
Warren D. Nichols, Florida State University
Craig A. Nolder, Florida State University

- 9:00AM (137) *Multiscale Stochastic Volatility Models*. **Jean-Pierre M Fouque**, North Carolina State University (994-60-08)
- 9:30AM **►** (138) *Mathematical Models for European Options with Dividends and Stochastic Volatility*. **Oswaldo D. Mendez**, University of Texas El Paso (994-91-64)
- 10:00AM (139) *The Market Price of Credit Risk*. **Kay Giesecke***, Cornell University, and **Lisa Goldberg**, Barra, Inc. (994-90-55)
- 10:30AM **►** (140) *Extreme events in financial markets: jumps and crashes*. **Maria Cristina Mariani**, New Mexico State University (994-90-58)

Special Session on Results in 3-Manifolds and Related Topics, III

9:00 AM – 10:50 AM Room 203, Rovetta Business Building

Organizers: **Wolfgang H. Heil**, Florida State University
Sergio R. Fenley, Florida State University

- 9:00AM (141) *Compression branched surfaces and tight laminations*. **Tao Li**, Oklahoma State University (994-57-120)
- 9:30AM (142) *Seifert surfaces with different depths*. Preliminary report. **Mark Brittenham**, University of Nebraska (994-57-101)
- 10:00AM (143) *Nonexistence of foliations*. Preliminary report. **Sergio Fenley**, Florida State University, **Rachel Roberts***, **John Shareshian**, Washington University in St Louis, and **Melanie Stein**, Trinity College (994-57-178)
- 10:30AM (144) *Uniform 1 Cochains and Genuine Laminations*. **Baris Coskunuzer**, Princeton University (994-57-207)

Special Session on Robert Gilmer and Joe Mott: Forty Years of Commutative Ring Theory at Florida State University, III

9:00 AM – 10:50 AM Room 206, Rovetta Business Building

Organizers: **William J. Heinzer**, Purdue University
James W. Brewer, Florida Atlantic University

- 9:00AM *The t -property for integral domains.*
(145) **Stefania Gabelli**, University of Rome III, **Evan Houston*** and **Thomas G Lucas**, UNC Charlotte (994-13-114)
- 9:30AM *Prufer Conditions on Rings.* Preliminary report.
(146) **Sarah Glaz**, University of Connecticut (994-13-129)
- 10:00AM *Prufer Domains.* Preliminary report.
(147) **K Alan Loper**, Ohio State University - Newark (994-13-142)
- 10:30AM *Prime ideals in ultraproducts of commutative rings.*
(148) Preliminary report.
Bruce M Olberding*, New Mexico State University, and **Jay Shapiro**, George Mason University (994-13-151)

- 4:00PM *Approximate Liftings in Commutative Algebra and a Theorem of Grothendieck.*
(157) **Phillip A Griffith**, University of Illinois (994-13-45)
- 4:30PM *Asymptotic behaviour of the length of local cohomology.*
(158) **S. Dale Cutkosky**, **Huy Tai Ha***, **Hema Srinivasan** and **Emanoil Theodorescu**, University of Missouri (994-14-42)
- 5:00PM *Bounding the relation-type of parameter ideals.*
(159) Preliminary report.
Laura Ghezzi, University of Missouri-Columbia (994-13-29)
- 5:30PM *Ideals of Linear Type and c -sequences.* Preliminary report.
(160) **Hamid Kulosman**, University of Illinois at Urbana - Champaign (994-13-93)

Special Session on Harmonic Analysis, III

9:00 AM – 10:50 AM Room 207, Rovetta Business Building

Organizers: **Daniel M. Oberlin**, Florida State University
Laura de Carli, Florida International University

- 9:00AM *Spaces Related to the Dirichlet Space.* Preliminary report.
(149) **Richard Rochberg**, Washington University (994-46-173)
- 9:30AM *Moser's inequality on the ball B^n for functions with mean value zero.*
▶ (150) **Mark Leckband**, Florida International University (994-46-185)
- 10:00AM *On G -Convergence of the Beltrami Operators.*
(151) **Tadeusz Iwaniec**, Syracuse University (994-35-146)
- 10:30AM Discussion

Invited Address

11:00 AM – 11:50 AM Room 101, Rovetta Business Building

- (152) *Markov decision processes and a potential application to biological sequence alignment.*
Fern Y. Hunt, National Institute of Standards (994-49-05)

Invited Address

1:30 PM – 2:20 PM Room 101, Rovetta Business Building

- (153) *On the homeomorphism problem.*
William H. Jaco, Oklahoma State University (994-57-04)

Special Session on Syzygies and Hilbert Functions, IV

2:30 PM – 5:50 PM Room 108, Rovetta Business Building

Organizers: **Irena Peeva**, Cornell University
Christopher A. Francisco, Cornell University

- 2:30PM *Curves defined by certain monomial ideals.*
(154) **Uwe Nagel***, University of Kentucky, and **Juan C Migliore**, University of Notre Dame (994-14-116)
- 3:00PM *Powers of Complete Intersections and Fat Points in Special Position.*
(155) **Adam Van Tuyl***, Lakehead University, and **Elena Guardo**, University of Catania (994-13-52)
- 3:30PM *Subsets of Complete Intersections in \mathbb{P}^n .* Preliminary report.
(156) **Susan Marie Cooper**, Queen's University (994-13-108)

Special Session on Financial Mathematics, IV

2:30 PM – 3:50 PM Room 103, Rovetta Business Building

Organizers: **Alec N. Kercheval**, Florida State University
Warren D. Nichols, Florida State University
Craig A. Nolder, Florida State University

- 2:30PM *An Agent Market Model Using Evolutionary Game Theory.*
(161) **Benoit S Montin*** and **Craig A Nolder**, Florida State University (994-91-41)
- 3:00PM *Completeness of Security Markets and Backward Stochastic Differential Equations with Unbounded Coefficients.*
(162) **Jiongmin Yong**, University of Central Florida (994-91-168)
- 3:30PM *Smoothing Defined Benefit Pension Plan Contributions.*
(163) **Steve Paris**, Florida State University (994-91-175)

Special Session on Applications of Mathematics to Problems in Biology, II

2:30 PM – 5:20 PM Room 102, Rovetta Business Building

Organizers: **Richard Bertram**, Florida State University
Jack Quine, Florida State University

- 2:30PM *Modeling mixed microbial growth: connecting theory and experiments.* Preliminary report.
▶ (164) **S S Pilyugin***, University of Florida, **G T Reeves**, Princeton University, and **A Narang**, University of Florida (994-92-97)
- 3:00PM *Competition and Coexistence of Strains: The Impact of Vaccination.* Preliminary report.
(165) **Maia Martcheva***, University of Florida, **Mimmo Iannelli**, University of Trento, and **Xue-Zhi Li**, Xinyang Teachers College (994-92-89)
- 3:30PM *Parameter Study of a Markov Decision Model for Protein Sequence Alignment.* Preliminary report.
(166) **Fern Hunt**, NIST (994-92-203)
- 4:00PM *Monte Carlo Methods for Calculating Some Physical Properties of a Large Molecule.*
(167) **Michael Mascagni*** and **Nikolai Simonov**, Florida State University (994-65-204)

- 4:30PM (168) *Rhythmic Hormone Secretion in Rats: Computational model of the hypothalamic mechanism controlling Prolactin secretion.*
Marcel Egli*, **Richard Bertram**, **Michael T. Sellix** and **Marc E. Freeman**, Florida State University (994-92-70)
- 5:00PM (169) *Modeling the Electrical Activity of Pancreatic Islets.*
Richard Bertram, Florida State University (994-92-48)

Special Session on Knot Theory and Applications, IV

2:30 PM – 5:50 PM Room 202, Rovetta Business Building

Organizer: **Yuanan Diao**, University of North Carolina at Charlotte

- 2:30PM (170) *The tight Borromean rings.*
John M Sullivan, TU Berlin / U Illinois (994-53-105)
- 3:00PM (171) *Braiding Operators are Universal Quantum Gates.* Preliminary report.
Louis H. Kauffman, University of Illinois at Chicago (994-57-92)
- 3:30PM (172) *From the Gehring Link Problem to Gehring Cloth (and Beyond).* Preliminary report.
Rob Kusner, MSRI (994-53-87)
- 4:00PM (173) *A Khovanov type homology theory for graphs.* Preliminary report.
Yongwu Rong* and **Laure Helme-Guizon**, The George Washington University (994-05-100)
- 4:30PM (174) *Total curvature and packing of knots.*
Jonathan Simon*, University of Iowa, and **Gregory Buck**, St. Anselm College (994-57-115)
- 5:00PM (175) *Computations in knot theory.* Preliminary report.
Morwen Thistlethwaite, University of Tennessee (994-57-169)
- 5:30PM (176) *Geometry, Topology and the Entanglement Phase Transition.*
Greg Buck*, Saint Anselm College, and **Jonathan Simon**, University of Iowa (994-82-202)

Special Session on Results in 3-Manifolds and Related Topics, IV

2:30 PM – 4:20 PM Room 203, Rovetta Business Building

Organizers: **Wolfgang H. Heil**, Florida State University
Sergio R. Fenley, Florida State University

- 2:30PM (177) *Width and Depth for Heegaard splittings.* Preliminary report.
John Hempel, Rice University (994-57-183)
- 3:00PM (178) *Relative Heegaard Genus of Haken 3-Manifolds.* Preliminary report.
Jennifer C Schultens, Univ Cal Davis (994-57-139)
- 3:30PM (179) *Blow-ups of ideal triangulations of 3-manifolds.* Preliminary report.
William Jaco*, Oklahoma State University, and **J Hyam Rubinstein**, University of Melbourne (994-57-88)
- 4:00PM (180) *Discretized configuration spaces.* Preliminary report.
Aaron D Abrams, University of Georgia (994-57-180)

Special Session on Robert Gilmer and Joe Mott: Forty Years of Commutative Ring Theory at Florida State University, IV

2:30 PM – 4:50 PM Room 206, Rovetta Business Building

Organizers: **William J. Heinzer**, Purdue University
James W. Brewer, Florida Atlantic University

- 2:30PM (181) *Indecomposable modules of large rank over double points.* Preliminary report.
Wolfgang Hassler, Karl-Franzens Universitaet Graz, and **Roger Wiegand***, University of Nebraska (994-13-157)
- 3:00PM (182) *SFT-property and the ring $D((X))$.* Preliminary report.
Byung Gyun Kang, Pohang University of Science and Technology, and **Elaoud Salma***, Higher Institute of Computer Science and Multimedias of Sfax (994-13-163)
- 3:30PM (183) *Finitely Generated Divisibility Groups.* Preliminary report.
Yves Lequain, Instituto de Matematica Pura e Aplicada (IMPA) (994-13-176)
- 4:00PM (184) *The monoid of fractional ideals of a one-dimensional local domain.* Preliminary report.
David C. Lantz*, Colgate University, and **William E. Heinzer**, Purdue University (994-13-192)
- 4:30PM (185) *The Strong Finite Type Property.*
Jim Coykendall, North Dakota State University (994-13-195)

Special Session on Algebraic Geometry and Topology, IV

2:30 PM – 4:30 PM Room 205, Rovetta Business Building

Organizers: **Eriko Hironaka**, Florida State University
Paolo Aluffi, Florida State University
Ettore Aldrovandi, Florida State University

- 2:30PM (186) *q-Analogs of Multiple Zeta Functions and Multiple Polylogarithms.*
Jianqiang Zhao, Eckerd College (994-11-21)
- 3:15PM (187) *Formality of Complex Hypersurface Complements.* Preliminary report.
Daniel Matei, University of Tokyo, Japan (994-55-16)
- 4:00PM (188) *The dimension of the Hilbert scheme of special threefolds.*
Gian Mario Besana*, DePaul University, and **Maria Lucia Fania**, Universita' degli Studi di L'Aquila (994-14-25)

Special Session on Geometric Topology in Honor of John Bryant, IV

2:30 PM – 5:30 PM Room 204, Rovetta Business Building

Organizers: **Washington Mio**, Florida State University
Erik K. Pedersen, Binghamton University (SUNY)

- 2:30PM (189) *Problems and progress in homology manifolds.*
Frank S. Quinn, Virginia Tech (994-57-74)
- 3:30PM (190) *Obstructions to transversality for homology manifolds.*
Heather M Johnston, Vassar College (994-57-161)

- 4:00PM *Uncountably many inequivalent Lipschitz*
 ► (191) *homogeneous Cantor sets.*
Dušan Repovš, University of Ljubljana (994-57-91)
- 4:30PM *Elimination of singularities of smooth mappings of*
 (192) *4-manifolds into 3-manifolds.*
Rustam R Sadykov, University of Florida
 (994-58-130)
- 5:00PM *Homeomorphism groups of manifolds and Erdős*
 (193) *space.*
Jan J Dijkstra* and **Jan van Mill**, Vrije Universiteit
 Amsterdam (994-57-13)

Special Session on Harmonic Analysis, IV

2:30 PM – 4:50 PM **Room 207, Rovetta Business Building**

Organizers: **Daniel M. Oberlin**, Florida State
 University
Laura de Carli, Florida International
 University

- 2:30PM *Distance set problem and weighted Fourier*
 (194) *extension estimates.*
M Burak Erdogan, UC Berkeley (994-42-131)
- 3:00PM *Diophantine equations, distance sets and incidence*
 ► (195) *theorems.*
Alex Iosevich, University of Missouri (994-42-65)
- 3:30PM *Sobolev norm estimates for functions with Fourier*
 (196) *transforms vanishing on families of spheres.*
 Preliminary report.
Oleg Kovrizhkin, FSU (994-42-159)
- 4:00PM *Level Set Operators vs. Oscillatory Integral*
 (197) *Operators.* Preliminary report.
Svetlana Roudenko* and **Andrew Comech**, Duke
 University (994-42-160)
- 4:30PM *Decay Estimates For Oscillatory Integrals With*
 (198) *Polynomial Phase in terms of $p^{(n-3)}$ and $p^{(n-2)}$ or in*
terms of $p^{(n-2)}$ and $p^{(n-1)}$.
Brian H Felkel, Appalachian State University
 (994-42-18)

John L. Bryant
 Associate Secretary
 Tallahassee, Florida