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# Program of the Sessions

Ann Arbor, Michigan, March 1-3, 2002

## Friday, March 1

### Meeting Registration

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11:30 AM - 4:30 PM Atrium, East Hall

### AMS Exhibit and Book Sale

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11:30 AM - 4:30 PM Room 1372, East Hall

### Special Session on Topics in Geometric Function Theory, I

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1:00 PM - 4:50 PM Room 229, Dennison Building

Organizers: **David A. Herron**, University of Cincinnati  
**Nageswari Shanmugalingam**, University of Texas  
**Jeremy T. Tyson**, SUNY at Stony Brook

- 1:00PM *Geometric Characterizations of Gromov Hyperbolicity.*  
(1) **Stephen M. Buckley**, NUI Maynooth/U. Michigan (974-30-223)
- 1:30PM *Elliptic diffusions, exit times and the quasihyperbolic metric.* Preliminary report.  
(2) **Craig A Nolder**, Department of Mathematics, Florida State University (974-60-10)
- 2:00PM *Symmetric Stable Processes Stay in Thick Sets.*  
(3) Preliminary report.  
**Jang-Mei Wu**, University of Illinois, University of Illinois, Urbana (974-31-52)
- 2:30PM *The Dirichlet problem for  $p$ -harmonic functions in metric spaces.*  
(4) **Anders Björn\***, Linköping University, **Jana Björn**, Lund University, and **Nageswari Shanmugalingam**, University of Texas at Austin (974-31-90)
- 3:00PM *Viscosity solutions on Grushin-type planes.*  
(5) **Thomas J. Bieske**, University of Michigan (974-35-211)

- 3:30PM *Approximation of Sobolev mappings.* Preliminary report.  
(6) **P Hajlasz**, Warsaw University and University of Michigan (974-46-233)
- 4:00PM  *$\mathcal{H}^1$ -Estimates of Jacobians.*  
(7) **Jani Onninen\***, University of Jyväskylä, and **Tadeusz Iwaniec**, Syracuse University (974-26-231)
- 4:30PM *On 'Wolff Snowflakes.'* Preliminary report.  
(8) **John L Lewis\***, University of Kentucky, **Verchota C Greg** and **Andrew L Vogel**, Syracuse University (974-30-20)

### Special Session on Commutative Algebra, I

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1:00 PM - 4:50 PM Room 205, Dennison Building

Organizers: **Florian Enescu**, University of Utah  
**Anurag K. Singh**, University of Utah  
**Karen E. Smith**, University of Michigan, Ann Arbor

- 1:00PM *A "Strong Factorization Theorem" and some applications.*  
(9) **Ana Bravo\***, University of Michigan, **Santiago Encinas**, Universidad de Valladolid, Spain, and **Orlando Villamayor U.**, Universidad Autonoma de Madrid, Spain (974-14-124)
- 1:30PM *Blow-up algebras and homological degree.*  
(10) Preliminary report.  
**Moir A. McDermott**, Gustavus Adolphus College (974-13-121)
- 2:00PM *Square-free monomial ideals via facet ideals.*  
▶ (11) Preliminary report.  
**Sara Faridi**, George Washington University (974-13-139)
- 2:30PM *Free resolutions for multigraded modules.*  
(12) Preliminary report.  
**Hara Charalambous** and **Alexandre Tchernev\***, University at Albany, SUNY (974-13-128)
- 3:00PM *Multiplicities of Monomial Ideals.* Preliminary report.  
(13) **Hema Srinivasan\***, University of Missouri, and **Juergen Herzog**, University of Essen (974-13-120)

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**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.

**Program of the Sessions – Ann Arbor, MI, Friday, March 1 (cont'd.)**

- 3:30PM *Minimality for complexes and differential graded modules*. Preliminary report.  
(14) **Luchezar L. Avramov**, University of Nebraska-Lincoln (974-18-41)
- 4:00PM *Gorenstein Liaison and the Construction of Gorenstein Algebras*.  
(15) **Jan Oddvar Kleppe**, Oslo University College, and **Chris S Peterson\***, Colorado State University / Purdue University (974-13-170)
- 4:30PM *Bernstein-Sato polynomials and cohomology of Milnor fibers*. Preliminary report.  
(16) **Uli Walther**, Purdue University (974-14-150)

- 2:30PM *Obstruction Theory in Model Categories*.  
(28) **J Daniel Christensen\***, University of Western Ontario, **William G Dwyer** and **Daniel C Isaksen**, University of Notre Dame (974-55-11)
- 3:00PM *On Steenrod and Dyer-Lashof operations in some mapping spaces*. Preliminary report.  
(29) **Craig C. Westerland**, University of Michigan, Ann Arbor (974-55-163)
- 3:30PM *Fake TQFT's*. Preliminary report.  
(30) **Tibor Beke**, University of Michigan, Ann Arbor (974-18-167)
- 4:00PM *On triviality of Dickson invariants in the homology of the Steenrod algebra*.  
(31) **Hung H. V. Nguyen**, Wayne State University (974-55-95)

**Special Session on Hyperbolic Manifolds and Discrete Groups, I**

1:00 PM – 4:50 PM Room 245, Dennison Building

Organizers: **Richard D. Canary**, University of Michigan, Ann Arbor  
**Alan W. Reid**, University of Texas, Austin

- 1:00PM *Automatic structures and geometric estimates for Kleinian groups*.  
(17) **Bryan Mosher**, University of Michigan (974-57-202)
- 1:30PM *Infinite index subgroups of convergence groups*.  
(18) **Edward C Taylor\*** and **Petra Bonfert-Taylor**, Wesleyan University (974-30-151)
- 2:00PM *Bumping of Exotic Projective Structures*.  
(19) **Ken Bromberg**, CalTech, and **John Holt\***, University of Illinois at Chicago (974-51-103)
- 2:30PM *Minimal volume Alexandrov spaces with applications to hyperbolic geometry*.  
(20) **Peter A Storm**, University of Michigan (974-51-19)
- 3:00PM *Some problems motivated by the one-dimensional rigidity*.  
(21) **Nikolai V. Ivanov**, Michigan State University (974-30-143)
- 3:30PM *Volume of tubes in hyperbolic 3-manifolds (joint work with David Gabai and Robert Meyerhoff)*.  
(22) **Peter L Milley**, Princeton University (974-57-248)
- 4:00PM *Double Lattice Packings of Disks in Euclidean Space*.  
▶ (23) Preliminary report.  
**Andrew Przeworski**, University of Texas at Austin (974-57-146)
- 4:30PM *Immersed surfaces in cusped hyperbolic 3-manifolds*.  
(24) **Colin C Adams\***, **Adam Colestock**, Williams College, **Danny Gillam**, Wesleyan University, **James Fowler**, Harvard University, and **Eric Katerman**, Williams College (974-57-47)

**Special Session on Algebraic Topology, I**

1:00 PM – 4:20 PM Room 221, Dennison Building

Organizers: **Robert Bruner**, Wayne State University  
**Igor Kriz**, University of Michigan, Ann Arbor

- 1:00PM *The diagonal map of a Poincaré duality space*.  
(25) Preliminary report.  
**John R Klein**, Wayne State University (974-55-85)
- 1:30PM *Topology of spaces of knots*.  
(26) **Dev Prakash Sinha**, University of Oregon and Brown University (974-55-154)
- 2:00PM *Representations and K-theory of the Braid Groups*.  
(27) Preliminary report.  
**Alejandro Adem\***, University of Wisconsin, **Dan Cohen**, Louisiana State University, and **Fred Cohen**, University of Rochester (974-55-09)

**Special Session on Moduli Spaces, I**

1:00 PM – 2:45 PM Room 216, Dennison Building

Organizers: **Angela Gibney**, University of Michigan, Ann Arbor  
**Gavril M. Farkas**, University of Michigan, Ann Arbor  
**Thomas A. Nevins**, University of Michigan, Ann Arbor  
**Gilberto Bini**, University of Michigan, Ann Arbor

- 1:00PM *Counting curves over finite fields and cohomology of moduli spaces I*. Preliminary report.  
(32) **Carel Faber\***, KTH (Stockholm), and **Gerard Van der Geer**, Universiteit van Amsterdam (974-14-78)
- 2:00PM *Counting curves over finite fields and cohomology of moduli spaces II*. Preliminary report.  
(33) **Gerard Van der Geer\***, Universiteit van Amsterdam, and **Carel Faber**, KTH (Stockholm) (974-14-79)

**Special Session on Algebraic Combinatorics, I**

1:00 PM – 4:50 PM Room 213, Dennison Building

Organizers: **Patricia Hersh**, University of Michigan, Ann Arbor  
**Brian D. Taylor**, Wayne State University

- 1:00PM *Generalized associahedra*.  
(34) **Sergey Fomin\***, University of Michigan, and **Andrei Zelevinsky**, Northeastern University (974-05-84)
- 1:30PM *Obstructions to shifted families*. Preliminary report.  
▶ (35) **Art Duval\***, University of Texas at El Paso, and **John W. Shareshian**, Washington University (974-05-111)
- 2:00PM *Some Statistical Perspectives of a Path Counting Formula*.  
(36) **Devadatta Kulkarni\***, Oakland University and GM R&D, and **Ananda Sen**, Oakland University (974-05-262)
- 2:30PM *Remarks on some connections between symmetric functions and resultants*. Preliminary report.  
(37) **Mercedes H. Rosas**, Universidad Simón Bolívar (974-05-54)
- 3:00PM *Ordered planar trees and the slope variety of the complete graph*. Preliminary report.  
(38) **Jeremy L Martin**, UC San Diego (974-05-71)
- 3:30PM *The Castelnuovo-Mumford regularity of subspace arrangements*.  
(39) **Harm Derksen** and **Jessica S Sidman\***, University of Michigan (974-13-66)

- 4:00PM *Some poset constructions motivated by commutative algebra.*  
(40) **Anders Björner**, KTH (Kungl. Tekniska Högskolan Stockholm), and **Volkmar Welker\***, Philipps-Universität Marburg (974-05-149)
- 4:30PM *Cohomology of toric varieties from a combinatorial viewpoint.*  
(41) **Eva-Maria E Feichtner**, ETH Zurich (974-52-210)

- 3:30PM *Constant Mean Curvature Immersions of Joachimsthal or Enneper type: Applications.*  
▶ (54) **Henry C Wente**, University of Toledo (974-35-254)
- 4:00PM *A semilinear parabolic system for migration and selection in population genetics.*  
(55) **Yuan Lou\***, Ohio State University, and **Thomas Nagylaki**, University of Chicago (974-35-57)
- 4:30PM *Exact multiplicity for semilinear elliptic Dirichlet problems involving concave and convex nonlinearities.*  
(56) **Moxun Tang**, Michigan State University (974-35-114)

**Special Session on Biological Applications of Dynamical Systems, I**

1:00 PM – 4:50 PM Room 1060, East Hall

Organizers: **J. M. Cushing**, University of Arizona  
**Shandelle M. Henson**, Andrews University  
**Anna M. Spagnuolo**, Oakland University

- 1:00PM *Predicting immune regulatory elements in the immune response to Mycobacterium tuberculosis.*  
(42) **Denise Kirschner**, Dept. of Microbiology & Immunology/University of Michigan Med School (974-92-213)
- 1:30PM *The roles of cytotoxic T lymphocytes and TNF- $\alpha$  in the immune response to Mycobacterium tuberculosis.*  
(43) **Brian M Murphy\*** and **Denise Kirschner**, University of Michigan (974-92-216)
- 2:00PM *Lattice Effects Observed in Chaotic Dynamics of Experimental Populations.*  
▶ (44) **Shandelle M. Henson**, Andrews University (974-92-62)
- 2:30PM *Temporal Patterns in Population Data: Order in Chaos.*  
▶ (45) **R. F. Costantino**, University of Rhode Island (974-92-166)
- 3:00PM *A Convergence Theorem for Lattice Maps.*  
(46) Preliminary report.  
**J M Cushing**, University of Arizona (974-37-63)
- 3:30PM *A Stage-Structured Model of Two Competing Species.*  
▶ (47) **Jeffrey L. Edmunds**, Mary Washington College (974-37-157)
- 4:00PM *Stability of Standing Waves and Steady States for Some Nonlinear Equations.* Preliminary report.  
(48) **Zhengfang Zhou**, Michigan State University (974-37-222)
- 4:30PM *The existence and uniqueness of a positive solution of an elliptic system.*  
(49) **Joon Hyuk Kang**, Andrews University (974-35-156)

**Special Session on Partial Differential Equations, I**

1:00 PM – 4:50 PM Room 1360, East Hall

Organizers: **Qing Han**, University of Notre Dame  
**Lihe Wang**, University of Iowa

- 1:00PM *Non-Formation of Vacuum States for the Compressible Navier-Stokes Equations.*  
(50) **Joel Smoller**, University of Michigan (974-35-194)
- 1:30PM *Subelliptic harmonic maps from Carnot groups.*  
(51) Preliminary report.  
**Changyou Wang**, University of Kentucky (974-35-209)
- 2:00PM *Phase Transition in KdV Modulations.*  
(52) **Fei-Ran Tian**, Ohio State University (974-35-98)
- 2:30PM *Euler equations with vacuum and damping.*  
(53) **Ronghua Pan**, University of Michigan (974-35-214)
- 3:00PM Discussion

**Special Session on Mapping Class Groups and Geometric Theory of Teichmüller Spaces, I**

1:00 PM – 4:50 PM Room 237, Dennison Building

Organizers: **Benson Farb**, University of Chicago  
**Nikolai Ivanov**, Michigan State University  
**Howard Masur**, University of Illinois, Chicago

- 1:00PM *Large scale structure of the mapping class group.*  
(57) **Yair N Minsky\***, SUNY at Stony Brook, and **Howard A Masur**, U. of Illinois at Chicago (974-30-176)
- 1:30PM *Stable quasigeodesics in Teichmüller space.*  
(58) **Lee Mosher**, Rutgers University at Newark (974-30-109)
- 2:00PM *"On Superinjective Simplicial Maps of Complexes of Curves and Injective Homomorphisms of Mapping Class Groups".* Preliminary report.  
(59) **Elmas Irmak**, Michigan State University (974-57-48)
- 2:30PM *Automorphisms of the Torelli group.* Preliminary report.  
(60) **Benson Farb**, University of Chicago (974-57-58)
- 3:00PM *The coarse geometry of the Weil-Petersson metric.*  
(61) **Jeffrey F. Brock\*** and **Benson Farb**, University of Chicago (974-51-144)
- 3:30PM *Automorphisms of the Pants Complex.*  
(62) **Dan Margalit**, University of Chicago (974-51-70)
- 4:30PM *Thompson's groups, Teichmüller theory and algebraic topology.* Preliminary report.  
(63) **William J Harvey**, King's College London (974-57-244)

**Special Session on Quantum Topology in Dimension Three, I**

3:00 PM – 4:50 PM Room 224, Dennison Building

Organizers: **Charles Frohman**, University of Iowa  
**Joanna Kania-Bartoszyńska**, Boise State University

- 3:00PM *Virtual Knot Theory.* Preliminary report.  
(64) **Louis Hirsch Kauffman**, Univ of Ill at Chicago (974-57-65)
- 3:30PM *On knot adjacency.* Preliminary report.  
(65) **Effie Kalfagianni**, Michigan State University (974-57-183)
- 4:00PM *3-dimensional topology inspired by number theory.*  
(66) Preliminary report.  
**Adam S. Sikora**, CRM, Montreal (974-57-255)
- 4:30PM *A combinatorial description of the Lie bialgebra of curves on surfaces.*  
(67) **Moira Chas**, SUNY at Stony Brook (974-57-240)

**Special Session on Integrable Systems and Poisson Geometry, I**

3:00 PM – 4:50 PM Room 1084, East Hall

Organizers: **Anthony Bloch**, University of Michigan  
**Philip Foth**, University of Arizona  
**Michael Gekhtman**, University of Notre Dame

- 3:00PM *Poisson brackets for integrable systems and complex analysis.* Preliminary report.  
(68) **Kirill Vaninsky**, Michigan State University (974-35-129)
- 3:30PM *The number of connected components in a generic double Bruhat cells.* Preliminary report.  
(69) **Mikhail Gekhtman**, University of Notre Dame, **Mikhail Shapiro\***, Michigan State University, and **Alek Vainshtein**, University of Haifa (974-22-177)
- 4:00PM *Integrable hamiltonian flows with positive metric entropy.*  
(70) **Leo T Butler**, Northwestern University (974-37-136)
- 4:30PM *Integrable Systems and Rank One Conditions for Rectangular Matrices.*  
(71) **Michael Gekhtman**, Notre Dame, and **Alex Kasman\***, College of Charleston (974-35-26)

**Invited Address**

5:10 PM – 6:00 PM Room 1324, East Hall

- (72) *Hölder and  $L^p$  estimates for  $\square_b$  operators on CR manifolds of arbitrary codimensions.*  
**Lihe Wang**, University of Iowa (974-32-257)

**Saturday, March 2**

**Meeting Registration**

8:00 AM – 4:30 PM Atrium, East Hall

**AMS Exhibit and Book Sale**

8:00 AM – 4:30 PM Room 1372, East Hall

**Special Session on Quantum Topology in Dimension Three, II**

8:30 AM – 11:20 AM Room 224, Dennison Building

Organizers: **Charles Frohman**, University of Iowa  
**Joanna Kania-Bartoszyńska**, Boise State University

- 8:30AM *Presentations od Skein Algebras.* Preliminary report.  
(73) **Mieczyslaw K. Dabkowski** and **Jozef H Przytycki\***, George Washington University (974-57-104)
- 9:00AM *The Weyl quantization and the quantum group quantization of the moduli space of flat  $SU(2)$ -connections on the torus are the same.*  
(74) **Razvan Gelca\***, Texas Tech University, and **Alejandro Uribe**, University of Michigan (974-57-76)
- 9:30AM *The braid theoretical approach to skein modules of 3-manifolds.* Preliminary report.  
(75) **Sofia Lambropoulou**, National Technical University of Athens (974-57-101)
- 10:00AM *Hochschild homology of a Heegaard splitting.* Preliminary report.  
(76) **Michael S McLendon**, University of Iowa (974-57-245)

- 10:30AM *Alexander-Conway polynomial of links, spanning trees and Milnor invariants.*  
(77) **Arkady Vaintrob**, University of Oregon (974-57-160)

- 11:00AM *Skein and String Homology.* Preliminary report.  
(78) **Uwe Kaiser**, Boise State University (974-57-113)

**Special Session on Topics in Geometric Function Theory, II**

8:30 AM – 11:20 AM Room 229, Dennison Building

Organizers: **David A. Herron**, University of Cincinnati  
**Nageswari Shanmugalingam**, University of Texas  
**Jeremy T. Tyson**, SUNY at Stony Brook

- 8:30AM *Doyle's Criterion of Type and a Counterexample to Nevanlinna's Conjecture.*  
(79) **Sergei Merenkov**, Purdue University (974-30-147)
- 9:00AM *Meromorphic functions of the form  $f(z) = \sum_{n=1}^{\infty} a_n/(z - z_n)$ .*  
(80) **John F Rossi\***, Virginia Tech, and **James K Langley**, University of Nottingham (974-30-18)
- 9:30AM *Schwarz lemmas for bounded univalent functions.*  
(81) **Eric D Schippers**, University of Michigan (974-30-08)
- 10:00AM *Backward-iteration sequences with bounded hyperbolic steps for analytic self-maps of the disk.*  
(82) **Pietro Poggi-Corradini**, Kansas State University and University of Michigan (974-30-23)
- 10:30AM *Boundary curves and analytic continuation.*  
(83) **Robert P Kaufman**, University of Illinois (974-30-81)
- 11:00AM *The Inner Radius and Sequences of Domains (Preliminary Report).* Preliminary report.  
(84) **Leila Miller-Van Wieren**, University of Texas (974-30-219)

**Special Session on Commutative Algebra, II**

8:30 AM – 11:20 AM Room 205, Dennison Building

Organizers: **Florian Enescu**, University of Utah  
**Anurag K. Singh**, University of Utah  
**Karen E. Smith**, University of Michigan, Ann Arbor

- 8:30AM *Generalizing  $k$ -configurations and Macaulay's  $O$ -sequences.*  
(85) **Sindi Sabourin**, Queen's University (974-13-207)
- 9:00AM *Hilbert coefficients of normal ideals.* Preliminary report.  
(86) **Claudia Polini\***, University of Notre Dame, **Alberto Corso**, University of Kentucky, and **Maria Evelina Rossi**, University of Genova (974-13-181)
- 9:30AM *The Castelnuovo-Mumford regularity of systems of linear ideals and modules.* Preliminary report.  
(87) **Harm Derksen** and **Jessica Sidman\***, University of Michigan (974-13-67)
- 10:00AM *Associated primes of the Mayr-Meyer ideals.*  
(88) **Irena Swanson**, New Mexico State University (974-13-106)
- 10:30AM *A power series problem motivated by lifting higher derivations.*  
(89) **William N Traves**, U.S. Naval Academy (974-13-16)
- 11:00AM *A linear function for stability of asymptotic primes.*  
(90) **Daniel Katz\***, University of Kansas, and **Eric West**, Benedictine College (974-13-155)

**Special Session on Hyperbolic Manifolds and Discrete Groups, II**

8:30 AM – 11:20 AM Room 245, Dennison Building

Organizers: **Richard D. Canary**, University of Michigan, Ann Arbor  
**Alan W. Reid**, University of Texas, Austin

- 8:30AM *Equivalent curves in surfaces*. Preliminary report. (91) **Christopher J Leininger**, University of Texas at Austin (974-57-247)
- 9:00AM *Tameness persists in strong limits of type-preserving sequences of hyperbolic 3-manifolds*. **Richard A Evans**, Rice University (974-57-234)
- 9:30AM *Cone-manifolds, drilling, and Ahlfors' conjecture*. Preliminary report. (93) **Jeffrey Brock\***, University of Chicago, **Kenneth Bromberg**, Caltech, **Richard Evans**, Rice University, and **Juan Souto**, Universitat Bonn (974-51-187)
- 10:00AM *On the density of geometrically finite Kleinian groups*. (94) **Jeff Brock**, University of Chicago, and **Kenneth Bromberg\***, California Institute of Technology (974-57-186)
- 10:30AM *The Orbifold Theorem*. Preliminary report. (95) **Daryl Cooper\***, UCSB, **Craig D Hodgson**, Melbourne, and **Steve P Kerckhoff**, Stanford (974-57-35)
- 11:00AM *The shape of hyperbolic Dehn surgery space*. Preliminary report. (96) **Craig Hodgson**, University of Melbourne, and **Steve Kerckhoff\***, Stanford University (974-53-89)

**Special Session on Algebraic Combinatorics, II**

8:30 AM – 11:20 AM Room 213, Dennison Building

Organizers: **Patricia Hersh**, University of Michigan, Ann Arbor  
**Brian D. Taylor**, Wayne State University

- 8:30AM *Combinatorics of Resonances*. (97) **Dmitry N Kozlov**, University of Washington (974-05-77)
- 9:00AM *Analogues of the Lie character for  $GL_n(q)$* . (98) **John Shareshian**, Washington University, St. Louis (974-05-193)
- 9:30AM *Polygraph arrangements*. (99) **Axel Hultman**, KTH, Stockholm (974-05-38)
- 10:00AM *Permutation Enumeration by Pairs of Congruence Classes of Major Index*. **Sheila Sundaram**, Danbury, CT (974-05-107)
- 10:30AM *Contractible and sphere-homotopic independence complexes*. Preliminary report. (101) **Gabor Hetyei\***, UNC Charlotte, and **Richard Ehrenborg**, University of Kentucky (974-05-29)
- 11:00AM *A random walk on zero-one contingency tables*. Preliminary report. (102) **Diane Maclagan**, Stanford University (974-05-125)

**Special Session on Biological Applications of Dynamical Systems, II**

8:30 AM – 11:20 AM Room 1060, East Hall

Organizers: **J. M. Cushing**, University of Arizona  
**Shandelle M. Henson**, Andrews University

Anna M. Spagnuolo, Oakland University

- 8:30AM *Schistosomiasis Models for Interacting Human Groups*. (103) **Cheng-che Li**, **Zhilan Feng** and **Fabio Augusto Milner\***, Purdue University (974-92-59)
- 9:00AM *Contact with Adhesion and Wear in Bone-Implants*. (104) **Meir Shillor**, Oakland University (974-74-152)
- 9:30AM *Modelling granuloma formation after Mycobacterium tuberculosis infection: phagocytosis and intracellular bacteria replication*. (105) **David Gammack\***, **Charlie Doering** and **Denise Kirschner**, University of Michigan (974-92-215)
- 10:00AM *Mathematical modeling of the intravenous glucose tolerance test by a delay differential equations system*. (106) **Simeone Marino**, University of Michigan Medical School (974-34-110)
- 10:30AM *Recent studies of an inverse source problem in human brain imaging*. Preliminary report. (107) **Gang Bao**, Michigan State University (974-35-87)
- 11:00AM *Turing patterns in Lengyel-Epstein reaction-diffusion systems*. Preliminary report. (108) **Moxun Tang\***, Michigan State University, **Wei-Ming Ni**, University of Minnesota, and **J Jang**, Hankuk University, South Korea (974-92-117)

**Special Session on Differential Geometry, I**

8:30 AM – 11:25 AM Room 232, Dennison Building

Organizers: **Lizhen Ji**, University of Michigan, Ann Arbor  
**Krishnan Shankar**, University of Michigan, Ann Arbor  
**Ralf Spatzier**, University of Michigan, Ann Arbor

- 8:30AM *The rigidity of higher dimensional graph-manifolds*. (109) **Jianguo Cao**, University of Notre Dame (974-53-212)
- 9:15AM *Unreduced weighted  $L_2$  cohomology of strictly negatively quarter pinched manifolds of finite volume*. Preliminary report. (110) **Stephen S Bullock**, University of Michigan (974-53-153)
- 10:00AM *Finsler Metrics of Constant Flag Curvature*. (111) **Zhongmin Shen**, Indiana Univ.-Purdue Univ. Indianapolis (974-53-225)
- 10:45AM *The  $\pi_1$  of manifolds with integrable geodesic flows*. (112) **Leo T Butler**, Northwestern University (974-53-134)

**Special Session on Partial Differential Equations, II**

8:30 AM – 11:20 AM Room 1360, East Hall

Organizers: **Qing Han**, University of Notre Dame  
**Lihe Wang**, University of Iowa

- 8:30AM *Structural analysis and boundary layer separations of 2D incompressible flows*. (113) **Shouhong Wang**, Indiana University (974-76-140)
- 9:00AM *Multidimensional Transonic Shocks and Free Boundary Problems*. (114) **Gui-Qiang Chen**, Northwestern University, and **Mikhail Feldman\***, University of Wisconsin-Madison (974-35-131)
- 9:30AM *Phase Transition in Nonlinear elasticity with viscosity and heat-conductivity*. (115) **Tao Luo**, University of Michigan (974-35-259)

## Program of the Sessions – Ann Arbor, MI, Saturday, March 2 (cont'd.)

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- 10:00AM *New well-posedness results for the Camassa-Holm equation.* (116)  
**Gerard Misiolek**, University of Notre Dame (974-35-199)
- 10:30AM *Boundary Value Problems in Morrey Spaces for Elliptic Systems on Lipschitz Domains.* (117)  
**Zhongwei Shen**, University of Kentucky (974-35-50)
- 11:00AM *Wigner Measure and the Semiclassical Limit of Schrödinger-Poisson Equations.* Preliminary report. (118)  
**Ping Zhang**, Academy of Mathematics and System Sciences, The Chinese Academy of Sciences, Beijing (974-35-258)
- 10:00AM *Coupled Boundary Value Perturbations for Solution of the Navier-Stokes Equation with Large Viscosity Gradients.* (129)  
**Gregory Gillette**, The Pennsylvania State University (974-34-83)
- 10:15AM *A new method of analysis of associative algebras.* Preliminary report. (130)  
**Vladimir Dergachev**, Ann Arbor, Michigan (974-16-142)
- 10:45AM *Test Of Divisibility of the number 7.* Preliminary report. (131)  
**Ranjit Eswaran**, University Of Minnesota (974-00-05)

### Special Session on Mapping Class Groups and Geometric Theory of Teichmüller Spaces, II

8:30 AM – 11:20 AM Room 237, Dennison Building

Organizers: **Benson Farb**, University of Chicago  
**Nikolai Ivanov**, Michigan State University  
**Howard Masur**, University of Illinois, Chicago

- 8:30AM *On the linearity problem for mapping class groups.* (119)  
**Hessam Hamidi-Tehrani\***, B.C.C. of the City University of New York, and **Tara E. Brendle**, Columbia University (974-57-73)
- 9:00AM *Relations in the Torelli Group.* Preliminary report. (120)  
**Tara E. Brendle**, Columbia University (974-57-82)
- 9:30AM *The second homology groups of mapping class groups of orientable surfaces.* (121)  
**Mustafa Korkmaz\***, Middle East Technical University, Ankara, Turkey, and **Andras I Stipsicz**, Princeton Univ. - ELTE TTK, Budapest, Hungary (974-57-53)
- 10:00AM *Bounded cohomology of subgroups of mapping class groups.* (122)  
**Mladen Bestvina**, University of Utah, and **Koji Fujiwara\***, Tohoku University (974-20-75)
- 10:30AM *Presentations for the mapping class groups of surfaces and handlebodies.* (123)  
**Susumu Hirose**, Michigan State University / Saga University (974-57-91)
- 11:00AM Discussion

### Session for Contributed Papers

8:30 AM – 11:25 AM Room 257, Dennison Building

- 8:45AM *Nonstandard Finite Difference Schemes for Nonlinear PDE's: Theory and Applications.* (124)  
**Ronald E Mickens**, Clark Atlanta University (974-65-13)
- 9:00AM *A generalization of the Gauss-Bonnet theorem for surfaces.* (125)  
**Marius Overholt**, University of Tromsø (974-53-74)
- 9:15AM *Concentration of area in half-planes (preliminary report).* Preliminary report. (126)  
**Roger W. Barnard**, **Alexander Yu. Solynin** and **Clint Richardson\***, Texas Tech University (974-30-108)
- 9:30AM *On the Zeros of Sequences of Polynomials.* (127)  
**Gerard L. Ornas**, Texas Tech University (974-30-241)
- 9:45AM *Redefining "Multiplicity of Infection" for Phage Therapy: a simple mathematical model.* (128)  
**Alex Kasman\***, College of Charleston, and **Laura Kasman**, Medical University of South Carolina (974-92-27)

- 11:00AM *A connection between closedness and local compactness for families of  $\mathcal{A}$ -harmonic functions.* (132)  
**Kevin W. Roogvin**, University of Michigan at Ann Arbor (974-35-184)
- 11:15AM *Incompressible surface in a knot complement.* Preliminary report. (133)  
**Jinha Jun**, Seoul National University (974-57-148)

### Special Session on Algebraic Topology, II

9:00 AM – 11:20 AM Room 221, Dennison Building

Organizers: **Robert Bruner**, Wayne State University  
**Igor Kriz**, University of Michigan, Ann Arbor

- 9:00AM *A chain model for the little 2-disks operad.* Preliminary report. (134)  
**James E. McClure\*** and **Jeffrey H. Smith**, Purdue University (974-55-46)
- 9:30AM *Derived Koszul duality for  $C_k$ -algebras.* (135)  
**Po Hu**, University of Chicago (974-55-64)
- 10:00AM *Cochains and Homotopy Type.* (136)  
**Michael A. Mandell**, University of Chicago (974-55-115)
- 10:30AM *The analytic circle-equivariant sigma orientation.* (137)  
**Matthew Ando**, Univ. of Illinois-Urbana (974-55-112)
- 11:00AM Discussion

### Special Session on Stochastic Modeling in Financial Mathematics, I

9:30 AM – 11:20 AM Room 1068, East Hall

Organizer: **Ronnie Sircar**, Princeton University

- 9:30AM *Stochastic Volatility Asymptotics.* (138)  
**Jean-Pierre Fouque**, North Carolina State University (974-60-188)
- 10:00AM *Analysis of Dependent Defaults via Intensity Based Approach, with Applications to Valuation of Basket Credit Derivatives.* (139)  
**Tomasz R Bielecki\***, Northeastern Illinois University, and **Marek Rutkowski**, Warsaw Institute of Technology (974-60-197)
- 10:30AM *Optimal Bankruptcy Time and Consumption/Investment Policies on an Infinite Horizon with a Continuous Debt Repayment until Bankruptcy.* (140)  
**Monique Jeanblanc**, Universite d'Evry, and **Peter Lakner\***, New York University (974-60-99)
- 11:00AM *A new algorithm for hedging large portfolios of derivative securities.* (141)  
**Stathis Tompaidis**, University of Texas at Austin (974-91-252)

**Special Session on Integrable Systems and Poisson Geometry, II**

10:00 AM – 11:20 AM Room 1084, East Hall

Organizers: **Anthony Bloch**, University of Michigan  
**Philip Foth**, University of Arizona  
**Michael Gekhtman**, University of Notre Dame

9:30AM Discussion

10:00AM *Biorthogonal Polynomials, Random Multimatrix Models and the Full Kostant-Toda Lattice.* (142)  
**Nicholas M Ercolani\***, University of Arizona, and  
**Kenneth T.-R. McLaughlin**, University of North Carolina at Chapel Hill & University of Arizona (974-33-192)10:30AM *Qualitative Behavior of some non-Abelian Toda Equations.* Preliminary report. (143)  
**Melinda Koelling\***, Rensselaer Polytechnic Institute, **Anthony Bloch**, University of Michigan, and **Michael Gekhtman**, University of Notre Dame (974-34-235)11:00AM *Moment maps and reductive symmetric pairs.* Preliminary report. (144)  
**Reyer Sjamaar\*** and **Yi Lin**, Cornell University (974-58-200)**Special Session on Moduli Spaces, II**

10:00 AM – 10:45 AM Room 216, Dennison Building

Organizers: **Angela Gibney**, University of Michigan, Ann Arbor  
**Gavril Farkas**, University of Michigan, Ann Arbor  
**Thomas Nevins**, University of Michigan, Ann Arbor  
**Gilberto Bini**, University of Michigan, Ann Arbor10:00AM *Vanishing Theorems for the Moduli Space of Curves.* (145)  
**Ravi Vakil\***, Stanford, and **Tom Graber**, Harvard (974-14-185)**Invited Address**

11:40 AM – 12:30 PM Room 1324, East Hall

(146) *Hyperbolic manifolds, discrete groups and quadratic forms.*  
**Alan W Reid**, University of Texas at Austin (974-57-161)**Invited Address**

2:00 PM – 2:50 PM Room 1324, East Hall

(147) *Pricing and risk management in incomplete markets.*  
**Thaleia Zariphopoulou**, University of Texas, Austin**Special Session on Hyperbolic Manifolds and Discrete Groups, III**

2:00 PM – 5:50 PM Room 245, Dennison Building

Organizers: **Richard D. Canary**, University of Michigan, Ann Arbor  
**Alan W. Reid**, University of Texas, Austin3:00PM *The classification of Kleinian surface groups.* Preliminary report. (148)  
**Yair N Minsky**, SUNY at Stony Brook (974-57-165)3:30PM *Constructing manifolds which bound geometrically.* (149)  
**Darren Long\***, UC Santa Barbara, and **Alan W Reid**, UT Austin (974-57-164)4:00PM *real and complex hyperbolic manifolds.* (150)  
**Rich Schwartz**, University of Maryland, College Park (974-51-201)4:30PM *Bending bounds for Quasifuchsian groups.* Preliminary report. (151)  
► **Bridgeman J Martin**, Boston College (974-51-137)5:00PM *Generalized bending laminations for hyperbolic  $n$ -manifolds.* Preliminary report. (152)  
**Kevin P Scannell**, Saint Louis University (974-57-158)5:30PM *Bounded geometry for Teichmüller geodesics.* (153)  
**Kasra Rafi**, UC Santa Barbara (974-51-224)**Special Session on Quantum Topology in Dimension Three, III**

3:00 PM – 4:50 PM Room 224, Dennison Building

Organizers: **Charles Frohman**, University of Iowa  
**Joanna Kania-Bartoszyńska**, Boise State University3:00PM *A sum formula for the Casson invariant via configuration spaces.* (154)  
**Christine Lescop**, Institut Fourier, CNRS, Grenoble, France (974-57-238)3:30PM *Integrality for TQFTs.* (155)  
**Patrick M Gilmer**, Louisiana State University (974-57-132)4:00PM *Finite length TQFT, symplectic invariant theory and the Casson invariant.* Preliminary report. (156)  
**Thomas Kerler**, The Ohio State University (974-57-178)4:30PM *Combinatorial Construct of Modular Functors.* (157)  
► **Zhengan Wang**, Indiana University (974-57-102)**Special Session on Topics in Geometric Function Theory, III**

3:00 PM – 4:50 PM Room 229, Dennison Building

Organizers: **David A. Herron**, University of Cincinnati  
**Nageswari Shanmugalingam**, University of Texas  
**Jeremy T. Tyson**, SUNY at Stony Brook3:00PM *A Möbius invariant metric II.* (158)  
**David Herron**, University of Cincinnati, **William Ma\***, Pennsylvania College of Technology, and **David Minda**, University of Cincinnati (974-30-34)3:30PM *The Möbius modulus of ring domains in  $\mathbb{R}^n$ .* Preliminary report. (159)  
**Zair S Ibragimov**, University of Michigan (974-30-172)4:00PM *Asymptotically Symmetric Embeddings and Symmetric Quasicircles.* Preliminary report. (160)  
**Shanshuang Yang**, Emory University (974-30-40)4:30PM *Reflections on reflections in quasidisks.* (161)  
**Frederick W Gehring** and **Kari Hag\***, University of Michigan (974-30-249)**Special Session on Integrable Systems and Poisson Geometry, III**

3:00 PM – 4:50 PM Room 1084, East Hall

Organizers: **Anthony Bloch**, University of Michigan  
**Philip Foth**, University of Arizona

**Michael Gekhtman**, University of Notre Dame

**Gavril Farkas**, University of Michigan, Ann Arbor

- 3:00PM *Integrable systems of conservation laws and projective theory of congruences.*  
(162) **S I Agafonov\*** and **E V Ferapontov**, Department of Mathematical Sciences, Loughborough University, United Kingdom (974-35-39)
- 3:30PM *Topology of the real part of hyperelliptic Jacobian associated with the periodic Toda lattice.*  
(163) **Yuji Kodama**, Ohio State University (974-51-175)
- 4:00PM *Symplectic leaves in triangular Poisson Lie groups.*  
(164) **Milen Yakimov\***, Cornell University, and **Tim Hodges**, University of Cincinnati (974-53-246)
- 4:30PM *Integrable Spin Calogero-Moser Systems.*  
(165) **Luen-Chau Li\*** and **Ping Xu**, Pennsylvania State University, University Park (974-58-169)

**Thomas Nevins**, University of Michigan, Ann Arbor  
**Gilberto Bini**, University of Michigan, Ann Arbor

- 3:00PM *The rational cohomology of the moduli space of principally polarized abelian 3-folds.*  
(174) **Richard M Hain**, Duke University (974-14-60)
- 4:00PM Discussion

### Special Session on Commutative Algebra, III

3:00 PM – 4:50 PM Room 205, Dennison Building

Organizers: **Florian Enescu**, University of Utah  
**Anurag K. Singh**, University of Utah  
**Karen E. Smith**, University of Michigan, Ann Arbor

- 3:00PM *Big Cohen-Macaulay algebras in dimension three via Heitmann's theorem.*  
(166) **Melvin Hochster**, University of Michigan (974-13-96)
- 3:30PM *Almost Mathematics and the Homological Conjectures.*  
(167) **Paul C Roberts**, University of Utah (974-13-72)
- 4:00PM *The F-signature of a ring of characteristic p.*  
(168) Preliminary report.  
**Craig Huneke** and **Graham J Leuschke\***, University of Kansas (974-13-22)
- 4:30PM *F-signatures of local rings.* Preliminary report.  
(169) **Ian M Aberbach\***, University of Missouri, and **Graham Leuschke**, University of Kansas (974-13-55)

### Special Session on Algebraic Topology, III

3:00 PM – 4:50 PM Room 221, Dennison Building

Organizers: **Robert Bruner**, Wayne State University  
**Igor Kriz**, University of Michigan, Ann Arbor

- 3:00PM *On the S-dual of a circle.*  
(170) **Nicholas J. Kuhn**, University of Virginia (974-55-116)
- 3:30PM *The Dold-Kan equivalence, simplicial rings and DGAs.*  
(171) **Brooke E Shipley**, Purdue University (974-18-118)
- 4:00PM *Topological equivalences of DGAs.* Preliminary report.  
(172) **Daniel Dugger**, Purdue University (974-55-195)
- 4:30PM *The classification of p-compact groups for p odd.*  
(173) **Kasper K. S. Andersen**, CRM, Barcelona, **Jesper Grodal\***, University of Chicago, **Jesper M. Møller**, University of Copenhagen, and **Antonio Viruel**, University of Malaga (974-55-180)

### Special Session on Moduli Spaces, III

3:00 PM – 4:45 PM Room 216, Dennison Building

Organizers: **Angela Gibney**, University of Michigan, Ann Arbor

### Special Session on Algebraic Combinatorics, III

3:00 PM – 4:50 PM Room 213, Dennison Building

Organizers: **Patricia Hersh**, University of Michigan, Ann Arbor  
**Brian D. Taylor**, Wayne State University

- 3:00PM *A weighted enumeration of maximal chains in the Bruhat order.*  
(175) **John R Stembridge**, University of Michigan (974-05-28)
- 3:30PM *Skew Schubert Polynomials.*  
(176) **Cristian Lenart**, SUNY Albany, and **Frank Sottile\***, University of Massachusetts at Amherst (974-05-45)
- 4:00PM *Properties of the Betti numbers of Schubert varieties.* Preliminary report.  
▶ (177) **Gregory S. Warrington**, University of Massachusetts at Amherst (974-05-130)
- 4:30PM *Subword complexes in Coxeter groups.*  
(178) **Allen Knutson**, UC Berkeley, and **Ezra Miller\***, M.I.T. (974-05-88)

### Special Session on Differential Geometry, II

3:00 PM – 5:00 PM Room 232, Dennison Building

Organizers: **Lizhen Ji**, University of Michigan, Ann Arbor  
**Krishnan Shankar**, University of Michigan, Ann Arbor  
**Ralf Spatzier**, University of Michigan, Ann Arbor

- 3:00PM *Rigidity of quasiconformal structures on the boundary of negatively curved manifolds.*  
(179) **Chris Connell**, University of Chicago (974-53-217)
- 3:45PM *On Ricci Rank for Nonpositively Curved Manifolds.*  
(180) Preliminary report.  
**Fangyang Zheng**, Ohio State University (974-53-51)
- 4:30PM Discussion

### Special Session on Partial Differential Equations, III

3:00 PM – 4:50 PM Room 1360, East Hall

Organizers: **Qing Han**, University of Notre Dame  
**Lihe Wang**, University of Iowa

- 3:00PM *Convex functions on the Heisenberg and Carnot groups.*  
(181) **Guozhen Lu\***, Wayne State University, **Juan J. Manfredi**, University of Pittsburgh, and **Bianca Stroffolini**, Università Degli Studi Di Napoli Federico (974-35-206)
- 3:30PM *Static Spherically Symmetric Solutions of Einstein SU(2) Yang Mills Equations.*  
▶ (182) **Alexander N Linden**, Indiana University (974-83-243)

# Sunday, March 3

- 4:00PM *Multiple Scale Models in Complex fluids*. Preliminary report. (183)  
**Chun Liu**, Dept of Math, Penn State University (974-35-205)
- 4:30PM *Quasiconvexity and restricted lower semicontinuity in the calculus of variations*. (184)  
**Baisheng Yan**, Michigan State University (974-35-93)

## Special Session on Mapping Class Groups and Geometric Theory of Teichmüller Spaces, III

3:00 PM – 4:50 PM Room 237, Dennison Building

Organizers: **Benson Farb**, University of Chicago  
**Nikolai Ivanov**, Michigan State University  
**Howard Masur**, University of Illinois, Chicago

- 3:00PM *The Geometry of the Weil-Petersson completion of Teichmüller space*. (185)  
**Scott A. Wolpert**, University of Maryland (974-30-220)
- 3:30PM *Classification of Weil-Petersson Isometries*. (186)  
**Georgios D. Daskalopoulos**, Brown University, and **Richard A. Wentworth\***, Johns Hopkins University (974-58-69)
- 4:00PM *Moduli Spaces of Harmonic and Minimal Mappings of Surfaces*. Preliminary report. (187)  
**Michael Wolf**, Rice University (974-58-122)
- 4:30PM *Divergent trajectories on noncompact spaces - rates and applications*. (188)  
**Barak Weiss**, Ben-Gurion University (974-37-228)

## Special Session on Stochastic Modeling in Financial Mathematics, II

3:00 PM – 4:50 PM Room 1068, East Hall

Organizer: **Ronnie Sircar**, Princeton University

- 3:00PM *Optimal execution with nonlinear cost functions and trading-enhanced risk*. (189)  
**Robert F Almgren**, University of Toronto (974-49-135)
- 3:30PM *Option pricing with stochastic volatility*. (190)  
**Knut Solna**, University of California at Irvine (974-60-145)
- 4:00PM *On the Convergence from Discrete to Continuous Time in an Optimal Stopping Problem*. (191)  
**Paul Dupuis** and **Hui Wang\***, Brown University (974-60-204)
- 4:30PM *Financial price fluctuations in a stock market model with many interacting agents*. (192)  
**Ulrich Horst**, Princeton University (974-60-133)

## Invited Address

5:10 PM – 6:00 PM Room 1324, East Hall

- (193) *Combinatorial models and algebraic questions in the theory of computing*.  
**Laszlo Babai**, University of Chicago

## Reception (Sponsored by the Department of Mathematics)

6:00 PM – 7:00 PM Atrium, East Hall

## Invited Address

9:00 AM – 9:50 AM Room 1324, East Hall

- (194) *On the low dimensional Kakeya problem*.  
**Nets H. Katz**, Washington University

## Special Session on Quantum Topology in Dimension Three, IV

10:00 AM – 12:50 PM Room 224, Dennison Building

Organizers: **Charles Frohman**, University of Iowa  
**Joanna Kania-Bartoszyńska**, Boise State University

- 10:00AM *On the structure of Ohtsuki series of 3-manifolds*. Preliminary report. (195)  
**Ruth Lawrence**, Hebrew University of Jerusalem (974-57-31)
- 10:30AM *The Jones polynomial and Temperley-Lieb representations of braid groups*. Preliminary report. (196)  
**Ilya S. Kofman**, Columbia University (974-57-198)
- 11:00AM *Approximating knot invariants by Vassiliev invariants*. (197)  
**Ilya Kofman**, Columbia University, and **Yongwu Rong\***, George Washington University (974-57-232)
- 11:30AM *Cyclotomic expansions of quantum invariants of 3-manifolds*. Preliminary report. (198)  
**Thang T Le**, SUNY Buffalo (974-57-141)
- NOON *Some remarks on Property P*. Preliminary report. (199)  
**Oliver T Dasbach\*** and **Tao Li**, Oklahoma State University (974-57-97)
- 12:30PM *Hirasawa's Seifert surfaces for A'Campo's divide links*. Preliminary report. (200)  
**Sergei V Chmutov**, The Ohio State University at Mansfield (974-57-173)

## Special Session on Topics in Geometric Function Theory, IV

10:00 AM – 12:50 PM Room 229, Dennison Building

Organizers: **David A. Herron**, University of Cincinnati  
**Nageswari Shanmugalingam**, University of Texas  
**Jeremy T. Tyson**, SUNY at Stony Brook

- 10:00AM *Isoperimetric inequalities for polygons*. (201)  
**Alexander Yu. Solynin**, Steklov Institute of Mathematics at St. Petersburg and Texas Tech University (974-30-230)
- 10:30AM *The exponent of convergence and a theorem of Astala*. (202)  
**Petra Bonfert-Taylor\*** and **Edward C Taylor**, Wesleyan University (974-30-80)
- 11:00AM *Circle Packings and Quasiconformal Maps*. Preliminary report. (203)  
**G Brock Williams**, Texas Tech University (974-30-171)
- 11:30AM *Aleksandrov Surfaces and Hyperbolicity*. (204)  
**Byung-Geun Oh**, Purdue University (974-30-189)
- NOON *Local Variations and Polarization Techniques*. (205)  
**Roger W Barnard\***, **Kent Pearce** and **Alexander Yu. Solynin**, Texas Tech University (974-30-92)
- 12:30PM Discussion

**Special Session on Integrable Systems and Poisson Geometry, IV**

10:00 AM – 12:20 PM Room 1084, East Hall

Organizers: **Anthony Bloch**, University of Michigan  
**Philip Foth**, University of Arizona  
**Michael Gekhtman**, University of Notre Dame

- 10:00AM *The Degree of Approximation of Analytic Functions by Solitons.* (206)  
**Peter D Miller**, University of Michigan (974-41-168)
- 10:30AM *Clifford algebras and the classical dynamical Yang-Baxter equation.* (207)  
**Eckhard Meinrenken**, University of Toronto (974-53-256)
- 11:00AM *On variants of the Bruhat-Poisson structure.* (208)  
**Sam Evens**, University of Notre Dame (974-53-218)
- 11:30AM Discussion
- NOON Discussion

**Special Session on Commutative Algebra, IV**

10:00 AM – 1:20 PM Room 205, Dennison Building

Organizers: **Florian Enescu**, University of Utah  
**Anurag K. Singh**, University of Utah  
**Karen E. Smith**, University of Michigan, Ann Arbor

- 10:00AM *On the vanishing of local cohomology modules.* (209)  
**Gennady Lyubeznik**, University of Minnesota (974-13-100)
- 10:30AM *Properties of the Frobenius endomorphism.* (210)  
**Claudia Miller**, University of Toronto (974-13-253)
- 11:00AM *Core, adjoint and coefficient ideals (Preliminary report).* (211)  
**Eero Hyry\***, University of Helsinki, and **Karen E Smith**, University of Michigan (974-13-43)
- 11:30AM *Special tight closure and big ideals.* (212)  
**Craig Huneke** and **Adela Vraciu\***, University of Kansas (974-13-94)
- NOON *Intersection homology D-modules and tight closure.* (213)  
Preliminary report.  
**Manuel Blickle**, Universität Essen, Germany (974-13-44)
- 12:30PM *Ramification of Valuations.* (214)  
**S Dale Cutkosky\***, University of Missouri, and **Olivier Piltant**, CMAT-Ecole Polytechnique (974-13-162)
- 1:00PM *Divisorial valuations of function fields with irrational volume.* (215)  
**Alex Kuronya**, University of Michigan (974-14-239)

**Special Session on Hyperbolic Manifolds and Discrete Groups, IV**

10:00 AM – 12:50 PM Room 245, Dennison Building

Organizers: **Richard D. Canary**, University of Michigan, Ann Arbor  
**Alan W. Reid**, University of Texas, Austin

- 10:00AM *A-polynomial and Bloch invariant.* Preliminary report. (216)  
**Walter D Neumann**, Barnard College, Columbia University (974-57-221)
- 10:30AM *Eigenvalue fields of hyperbolic manifolds.* (217)  
Preliminary report.  
**Emily Hamilton\***, Emory University, and **Alan W Reid**, University of Texas at Austin (974-57-36)

- 11:00AM *Diophantine approximation in negatively curved manifolds.* (218)  
**Sa'ar David Hersonsky\***, Ben-Gurion University, Israel, and **Frederic Paulin**, ENS-PARIS (974-57-208)
- 11:30AM *Classification of non-free 2-parabolic generator Kleinian groups.* (219)  
**Ian Agol**, University of Illinois at Chicago (974-57-06)
- NOON *Imbedding free actions on handlebodies in free actions on 3-manifolds.* (220)  
**Darryl McCullough**, University of Oklahoma (974-57-30)
- 12:30PM *Laminations and groups of homeomorphisms of the circle.* (221)  
**Danny Calegari** and **Nathan M Dunfield\***, Harvard University (974-57-33)

**Special Session on Moduli Spaces, IV**

10:00 AM – 12:15 PM Room 216, Dennison Building

Organizers: **Angela Gibney**, University of Michigan, Ann Arbor  
**Gavril Farkas**, University of Michigan, Ann Arbor  
**Thomas Nevins**, University of Michigan, Ann Arbor  
**Gilberto Bini**, University of Michigan, Ann Arbor

- 10:00AM *A complex ball uniformization of the moduli space of cubic surfaces via periods of K3 surfaces.* (222)  
**Igor Dolgachev**, University of Michigan (974-14-250)
- 11:30AM *The Chow ring of the moduli space of curves.* (223)  
Preliminary report.  
**Tom B Graber**, Harvard University (974-14-179)

**Special Session on Algebraic Combinatorics, IV**

10:00 AM – 12:50 PM Room 213, Dennison Building

Organizers: **Patricia Hersh**, University of Michigan, Ann Arbor  
**Brian D. Taylor**, Wayne State University

- 10:00AM *On the dual canonical basis of  $U_q(n)$ .* Preliminary report. (224)  
**Bernard Leclerc**, Université de Caen, France. (974-05-42)
- 10:30AM *Sperner's Lemma and Representation Theory.* (225)  
Preliminary report.  
**Peter M Magyar**, Michigan State University (974-05-105)
- 11:00AM *A Tensor Product Theorem for Perfect Crystals.* (226)  
**Mark Shimozono**, Virginia Tech (974-05-261)
- 11:30AM *A short simplicial h-vector and the Upper Bound Theorem.* (227)  
**Patricia L Hersh**, University of Michigan, Ann Arbor, and **Isabella Novik\***, University of Washington (974-05-49)
- NOON *Quasisymmetric functions and Eulerian enumeration.* (228)  
**Louis J Billera**, **Samuel K Hsiao\*** and **Stephanie van Willigenburg**, Cornell University (974-05-37)
- 12:30PM *Inequalities for Polytopes.* (229)  
**Richard Ehrenborg**, University of Kentucky (974-05-21)

**Special Session on Differential Geometry, III**

10:00 AM – 12:10 PM Room 232, Dennison Building

Organizers: **Lizhen Ji**, University of Michigan, Ann Arbor**Krishnan Shankar**, University of Michigan, Ann Arbor**Ralf Spatzier**, University of Michigan, Ann Arbor

- 10:00AM *Vector bundles with infinitely many souls.*  
(230) **Igor Belegradek**, Caltech (974-53-138)
- 10:45AM *Obstructions to nonnegative curvature and rational homotopy theory.*  
(231) **Vitali Kapovitch\***, University of California at Santa Barbara, and **Igor Belegradek**, Caltech (974-53-14)
- 11:30AM *The second twisted Betti number and the convergence of collapsing manifolds with bounded curvature and diameter.*  
(232) **Fuquan Fang**, NanKai Institute of Mathematics, and **Xiaochun Rong\***, Rutgers University and Beijing Normal University (974-53-68)

**Special Session on Partial Differential Equations, IV**

10:00 AM – 11:50 AM Room 1360, East Hall

Organizers: **Qing Han**, University of Notre Dame  
**Lihe Wang**, University of Iowa

- 10:00AM *Uniqueness in the inverse conductivity problem for conductivities with  $3/2$  derivatives in  $L^p$  for  $p > 2n$ .*  
(233) **Russell M. Brown\***, University of Kentucky, and **Rodolfo H. Torres**, University of Kansas (974-35-236)
- 10:30AM *A Bernstein problem for special Lagrangian equations.*  
▶ (234) **Yu Yuan**, U. of Chicago and U. of Washington (974-35-119)
- 11:00AM *Analyticity of the Cauchy Problem for an integrable evolution equation.*  
(235) **Alex A. Himonas**, University of Notre Dame (974-35-196)
- 11:30AM *The Global Dynamics of Isothermal Chemical Systems with Critical Nonlinearity.*  
(236) **Yi Li\***, University of Iowa, and **Yuan-Wei Qi**, Hong Kong University of Science & Technology (974-35-260)

**Special Session on Mapping Class Groups and Geometric Theory of Teichmüller Spaces, IV**

10:00 AM – 12:50 PM Room 237, Dennison Building

Organizers: **Benson Farb**, University of Chicago  
**Nikolai Ivanov**, Michigan State University  
**Howard Masur**, University of Illinois, Chicago

- 10:00AM *Homology of moduli spaces of Riemann surfaces with symplectic coefficients.* Preliminary report.  
(237) **Myint Zaw\***, The Abdus Salam ICTP, and **Carl Friedrich Boedigheimer**, Universitat Bonn (974-57-190)
- 10:30AM *Stratification of the Moduli Space of Hyperelliptic Surfaces.*  
(238) **Anthony Weaver**, City University of New York (974-51-56)

- 11:00AM *An illustration of the action of the Riemann surfaces on the free loop space of a manifold.*  
(239) **Maira Chas\***, SUNY at Stony Brook, and **Dennis Sullivan**, SUNY at Stony Brook, CUNY (974-57-126)
- 11:30AM *The geometry of  $\mathcal{M}_g$  and the normal function associated to  $C - C^-$ .* Preliminary report.  
(240) **Richard M Hain**, Duke University (974-14-61)
- NOON *Lengths of Measured Laminations on Surfaces.*  
(241) **Feng Luo**, Rutgers University (974-57-86)
- 12:30PM Discussion

**Special Session on Stochastic Modeling in Financial Mathematics, III**

10:00 AM – 11:50 AM Room 1068, East Hall

Organizer: **Ronnie Sircar**, Princeton University

- 10:00AM *Option pricing in the presence of large agents.*  
(242) **Mattias Jonsson\*** and **Jussi Keppo**, University of Michigan (974-60-174)
- 10:30AM *Are companies ready to hire?*  
▶ (243) **Xin Guo**, IBM T. J. Watson Research Center (974-60-191)
- 11:00AM *Optimality in the Presence of Durable Good.*  
(244) **Jussi S Keppo**, University of Michigan (974-91-182)
- 11:30AM *Stochastic Optimization Algorithms for Stock Liquidation.* Preliminary report.  
(245) **G. Yin\***, Wayne State University, **Q. Zhang** and **R.H. Liu**, University of Georgia (974-60-203)

**Susan J. Friedlander**  
Associate Secretary  
Chicago, Illinois