
Program of the Sessions

Irvine, California, November 10–11, 2001

Saturday, November 10

Meeting Registration

7:30 AM – 4:30 PM Lobby, Rowland Hall

AMS Exhibit and Book Sale

7:30 AM – 4:30 PM Room 188, Rowland Hall

Special Session on Operator Spaces, Operator Algebras, and Applications

8:00 AM – 10:50 AM Room 118, Multipurpose Science and Technology

Organizers: **Marius Junge**, University of Illinois, Urbana-Champaign
Timur Oikhberg, University of Texas and University of California Irvine

- 8:00AM (1) *Ranking functions on operator spaces and completely rank-nonincreasing linear maps.* Preliminary report.
David Larson*, Texas A&M University, and **Donald Hadwin**, University of New Hampshire (972-47-180)
- 8:30AM (2) *Composition Operators on Uniform Algebras.*
Theodore W Gamelin, UCLA (972-46-99)
- 9:00AM (3) *A prime C^* -algebra that is not primitive.*
Nik Weaver, Washington University (972-46-45)
- 9:30AM (4) *Geometric characterizations of some classes of operators in C^* -algebras and von Neumann algebras.*
Charles A. Akemann*, University of California, Santa Barbara, and **Nik Weaver**, Washington University (972-46-37)
- 10:00AM (5) *Vector-valued noncommutative L_p spaces and martigales.* Preliminary report.
Marius Junge, University of Illinois at Urbana-Champaign (972-46-182)

- 10:30AM (6) *Indiscernible versus exchangeable sequences of non-commutating random variables.* Preliminary report.
Haskell Rosenthal, University of Texas at Austin, Austin, TX (972-46-128)

Special Session on Quantum Topology

8:30 AM – 10:50 AM Room 114, Rowland Hall

Organizers: **Louis Kauffman**, University of Illinois at Chicago
Jozef Przytycki, George Washington University
Fernando Souza, University of Waterloo

- 8:30AM (7) *Computing Kauffman bracket skein modules.*
Doug Bullock*, Boise State University, and **Walter LoFaro**, University of Wisconsin, Stevens Point (972-57-156)
- 9:00AM (8) *The Hochschild homology of a Heegaard splitting.* Preliminary report.
Charles D Frohman* and **Mike McLendon**, The University of Iowa (972-57-12)
- 9:30AM (9) *Limiting behavior of the Yang-Mills measure.*
Charles Frohman, University of Iowa, and **Joanna Kania-Bartoszyńska***, Boise State University (972-57-63)
- 10:00AM (10) *Skein modules and the Berezin quantization of the moduli space of $SU(2)$ -flat connections on the torus.*
Razvan Gelca*, Texas Tech University, and **Alejandro Uribe**, University of Michigan (972-57-75)
- 10:30AM (11) *Skein Modules and String Topology.* Preliminary report.
Uwe Kaiser, Boise State University (972-57-83)

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 22, Issue 4 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.

Special Session on Extremal Metrics and Moduli Spaces

8:40 AM – 10:50 AM Room 108, Rowland Hall

Organizers: **Steven Bradlow**, University of Illinois, Urbana-Champaign
Claude LeBrun, State University of New York, Stony Brook
Yat Sun Poon, University of California Riverside

- 8:40AM *Function Spaces of Kähler Metrics*. Preliminary report. (12)
Eugenio Calabi, University of Pennsylvania (emer.) (972-53-129)
- 9:30AM *The uniqueness of Extremal Kaehler metrics*. Preliminary report. (13)
Xiuxiong Chen, Princeton University (972-53-125)
- 10:00AM *Existence and Geodesic Stability*. Preliminary report. (14)
Zhuang-dan D Guan, The University of California at Riverside (972-53-31)
- 10:30AM *On a class of extremal Kaehler metrics on toric varieties*. (15)
Vestislav Apostolov*, UQAM, Montreal, **David Calderbank**, Edinburgh, Scotland, and **Paul Gauduchon**, CNRS, Palaiseau (972-53-91)

Special Session on Random and Deterministic Schrödinger Operators

8:45 AM – 10:50 AM Room 122, Multipurpose Science and Technology

Organizers: **Svetlana Jitomirskaya**, University of California Irvine
Abel Klein, University of California Irvine

- 8:45AM *Nonperturbative localization for the quantum kicked rotor model*. Preliminary report. (16)
Jean Bourgain, IAS, and **Svetlana Jitomirskaya***, UCI (972-81-140)
- 9:15AM *Transition from quenched to annealed asymptotics for the reaction-diffusion equation in random environment*. (17)
Stanislav A Molchanov, UNC, Charlotte (972-60-74)
- 9:55AM *A Fluctuation Analysis of Localization in One Dimension*. (18)
Michael Aizenman, **Alex Elgart** and **Jeffrey H Schenker***, Princeton University (972-81-148)
- 10:25AM *Sparse Potentials with Fractional Hausdorff Dimension*. (19)
Andrej Zlatoš, Caltech (972-34-58)

Special Session on Topology of Algebraic Varieties

9:00 AM – 10:40 AM Room 210, Physical Sciences Classroom Bldg

Organizers: **Eriko Hironaka**, Florida State University
Grigory Mikhalkin, University of Utah

- 9:00AM *Monodromy representations and Szpiro type inequalities*. Preliminary report. (20)
Fedor A. Bogomolov, Courant Institute of Mathematical Sciences (972-00-198)
- 10:00AM *Topology of Stein Surfaces*. (21)
Selman Akbulut* and **Burak Ozbagci**, MSU (972-57-143)

Special Session on Partial Differential Equations and Applications

9:00 AM – 10:55 AM Room 120, Multipurpose Science and Technology

Organizer: **Edriss S. Titi**, University of California Irvine

- 9:00AM *On zero mass solutions of viscous conservation laws*. (22)
Maria E Schonbek*, University of California Santa Cruz, and **Grzegorz Karch**, Uniwersytet Wroclawy (972-76-44)
- 9:30AM *Number of Determining Modes in Numerical 2D Turbulence*. Preliminary report. (23)
Eric Olson*, University of Nevada, Reno, and **Edriss Titi**, University of California, Irvine (972-35-162)
- 10:00AM *Atomistic Theory of Elasticity for Epitaxial Thin Films*. (24)
Russel E Cafišich* and **Cameron Connell**, UCLA (972-35-40)
- 10:30AM *A mathematical model of microbial growth*. (25)
Don A Jones, Arizona State University (972-35-42)

Special Session on Groups and Covering Spaces in Algebraic Geometry

9:00 AM – 10:50 AM Room 114, Multipurpose Science and Technology

Organizers: **Michael Fried**, University of California Irvine
Helmut Voelklein, University of Florida

- 9:00AM *Identity representations in characteristic Frattini modules and their effect on the inverse Galois problem*. (26)
Michael D Fried, UC Irvine (972-20-98)
- 9:40AM *Davenport Polynomials over Finite Fields*. (27)
Wayne E Aitken*, **Linda Holt**, California State University, San Marcos, and **Mike Fried**, University of California Irvine (972-11-167)
- 10:20AM *Exceptional Covers of Curves*. (28)
Robert M Guralnick, University of Southern California (972-12-25)

Special Session on Harmonic Analysis and Complex Analysis

9:00 AM – 10:50 AM Room 124, Multipurpose Science and Technology

Organizers: **Xiaojun Huang**, Rutgers University
Song-Ying Li, University of California, Irvine

- 9:00AM *Compactness of the $\bar{\partial}$ -Neumann problem and lowest eigenvalues of Schrödinger operators*. Preliminary report. (29)
Siqi Fu, University of Wyoming, and **Emil J Straube***, Texas A&M University (972-32-165)
- 9:30AM *Szego and Bergman projections for non-smooth planar domains*. Preliminary report. (30)
Loredana Lanzani, University of Arkansas (972-30-164)
- 10:00AM *Analytic hypoellipticity in the sense of germs for an operator with Treves curves*. Preliminary report. (31)
Nicholas Hanges, Lehman College/CUNY (972-35-59)

10:30AM *Hearing a pseudoconvex domain.* Preliminary report. (32)
Siqi Fu, University of Wyoming and Princeton University (972-32-184)

Special Session on Harmonic Analyses and Partial Differential Equations

9:00 AM – 10:50 AM **Room 220, Physical Sciences Classroom Bldg**

Organizers: **Gustavo Ponce**, University of California Santa Barbara
Gigliola Staffilani, Stanford University

9:00AM *A vortex degree estimate for the stationary Ginzburg-Landau equation.* (33)
Igor Kukavica, University of Southern California (972-35-149)

9:40AM *Inverse Elasticity.* Preliminary report. (34)
James V Ralston* and **Gregory Eskin**, University of California at Los Angeles (972-35-94)

10:20AM *Long Time Existence for Nonlinear Wave Equations.* (35)
Markus A Keel*, University of Minnesota, **Hart Smith**, University of Washington, and **Christopher D Sogge**, Johns Hopkins (972-35-163)

Special Session on Dynamical Systems of Billiard Type

9:00 AM – 10:50 AM **Room 240, Physical Sciences Classroom Bldg**

Organizers: **Marek Rychlik**, University of Arizona
Andrew Torok, University of Houston

9:00AM *The Ergodicity of Typical Hard Sphere Systems in 2D: Geometric Aspects.* (36)
Nandor Simanyi, The University of Alabama at Birmingham (972-37-104)

9:40AM *Periodic orbit theory analysis of simple variants of familiar two dimensional billiard systems.* (37)
Richard W Robinett, Penn State University (972-37-117)

10:20AM *The measure of periodic points of billiards - a computational algebraic geometry approach.* (38)
Marek R Rychlik, University of Arizona (972-70-194)

Invited Address

11:10 AM – NOON **Room 104, Rowland Hall**
(39) *Amoebas of algebraic varieties.*
Grigory Mikhalkin, University of Utah (972-14-03)

Invited Address

1:30 PM – 2:20 PM **Room 104, Rowland Hall**
(40) *Recent directions in automorphic forms and analytic number theory.*
William Duke, University of California Los Angeles (972-11-04)

Special Session on Quantum Topology

3:00 PM – 5:50 PM **Room 114, Rowland Hall**

Organizers: **Louis Kauffman**, University of Illinois at Chicago
Jozef Przytycki, George Washington University
Fernando Souza, University of Waterloo

3:00PM *Why Turaev-Viro Theory is not a Modular Functor and Why That's OK.* Preliminary report. (41)
Stephen French Sawin*, Fairfield University, and **John W. Barrett**, University of Nottingham (972-81-201)

3:30PM *Generalizations of the Kashaev conjecture.* Preliminary report. (42)
Hitoshi Murakami, Tokyo Institute of Technology (972-57-49)

4:00PM *The integer valued SU(3) Casson invariant for Brieskorn spheres.* Preliminary report. (43)
Hans U Boden, McMaster University, **Paul Kirk**, Indiana University, and **Christopher M Herald***, University of Nevada, Reno (972-57-145)

4:30PM *Cut numbers of 3-manifolds.* Preliminary report. (44)
Adam S Sikora, ISM/CRM (972-57-154)

5:00PM *Resolutions of p-Modular TQFT's and the Alexander Polynomial of 3-manifolds.* (45)
Thomas Kerler, The Ohio State University (972-57-192)

5:30PM *Some structure theory for semisimple monoidal categories.* Preliminary report. (46)
Greg Kuperberg, UC Davis (972-18-174)

Special Session on Topology of Algebraic Varieties

3:00 PM – 5:40 PM **Room 210, Physical Sciences Classroom Bldg**

Organizers: **Eriko Hironaka**, Florida State University
Grigory Mikhalkin, University of Utah

3:00PM *Computing Amoebas.* Preliminary report. (47)
Bernd Sturmfels*, UC Berkeley, and **Thorsten Theobald**, Technical University Munich (972-14-21)

4:00PM *Link theoretic invariants of real algebraic curves.* Preliminary report. (48)
Patrick M Gilmer, Louisiana State university (972-57-101)

5:00PM *Lehmer's polynomial and isolated hypersurface singularities.* Preliminary report. (49)
Eriko Hironaka, Florida State University (972-14-166)

Special Session on Partial Differential Equations and Applications

3:00 PM – 5:55 PM **Room 120, Multipurpose Science and Technology**

Organizer: **Edriss S. Titi**, University of California Irvine

3:00PM *Remarks on the primitive equations of the ocean.* (50)
Mohammed B Ziane, University of Southern California (972-35-171)

3:30PM *Structure of three-wave interactions and regularity of solutions of Euler equations for rapidly rotating fluids.* (51)
Anatoli V Babin, UC Irvine (972-76-73)

4:00PM *Global Well-posedness and Finite Dimensional Global Attractor for a 3-D Planetary Geostrophic Viscous Model.* (52)
Chongsheng Cao*, Los Alamos National Laboratory, and **Edriss S Titi**, University of California, Irvine (972-35-61)

4:30PM *Global existence and non-existence theorems for nonlinear wave equations.* (53)
Mohammad A Rammaha* and **David R Pitts**, University of Nebraska-Lincoln (972-35-39)

- 5:00PM *Finite dimensionality and regularity of attractors for 2-D semilinear wave equation with non-linear dissipation.*
(54) **Irena Lasiecka** and **Anastasia A Ruzmaikina***, University of Virginia (972-35-146)
- 5:30PM *Nevalinna-Pick Interpolation of Attractors.*
(55) **Ciprian Foias**, Indiana Univ./ Texas A&M, **Michael S. Jolly***, Indiana University, and **Wing-Suet Li**, Georgia Tech/Virginia Tech (972-35-169)

Special Session on Groups and Covering Spaces in Algebraic Geometry

3:00 PM – 5:50 PM

Room 114, Multipurpose Science and Technology

Organizers: **Michael Fried**, University of California Irvine
Helmut Voelklein, University of Florida

- 3:00PM *Sufficiency of Projective Polynomials.*
(56) **Shreeram S. Abhyankar**, Purdue University (972-14-20)
- 3:40PM *Abhyankar's Local Conjecture on Fundamental Groups.*
(57) **Stevenson F Katherine***, Cal. State Northridge, and **David Harbater**, University of Pennsylvania (972-14-102)
- 4:20PM break
- 4:40PM *Rigidity, Reduction and Ramification.*
(58) **Irene Bouw**, Max Planck Institute, and **Rachel Pries***, Columbia University (972-14-65)
- 5:20PM *Orthogonal deformations of Galois representations.*
(59) Preliminary report.
Ted C Chinburg*, Univ. of Pennsylvania, and **Frauke M Bleher**, Univ. of Iowa (972-14-70)

Special Session on Random and Deterministic Schrödinger Operators

3:00 PM – 5:45 PM

Room 122, Multipurpose Science and Technology

Organizers: **Svetlana Jitomirskaya**, University of California Irvine
Abel Klein, University of California Irvine

- 3:00PM *Spectral and scattering theory of the surface Maryland model.*
(60) **Vojkan Jaksic***, McGill University, and **Stanislav Molchanov**, University of North Carolina, Charlotte (972-47-52)
- 3:40PM *A characterization of the Anderson metal-insulator transport transition.* Preliminary report.
(61) **Abel Klein***, University of California, Irvine, and **Franois Germinet**, Universite de Lille 1 (972-81-108)
- 4:10PM *A general contraction property in $PSL(2, R)$ by T. Wolff.*
(62) **Carol A Shubin**, CSUN (972-81-112)
- 4:40PM *A diamagnetic inequality for semigroup differences.*
▶ (63) Preliminary report.
Dirk Hundertmark* and **Barry Simon**, Caltech (972-46-168)
- 5:10PM *Absence of Exponential Localization for Multidimensional Lattice Hamiltonians With Fast Local Periodic Approximation.*
(64) **Alexander Y Gordon**, Charlotte, NC (972-47-187)

Special Session on Extremal Metrics and Moduli Spaces

3:00 PM – 5:30 PM

Room 108, Rowland Hall

Organizers: **Steven Bradlow**, University of Illinois, Urbana-Champaign
Claude LeBrun, State University of New York, Stony Brook
Yat Sun Poon, University of California Riverside

- 3:00PM *A Gradient Estimate for the Ricci-Kähler Flow.*
(65) **Bennett Chow**, UCSD (972-58-16)
- 3:30PM *On complete Kähler-Ricci solitons of nonnegative curvatures.*
(66) **Huai-Dong Cao**, Texas A&M University (972-53-78)
- 4:00PM *On Einstein manifolds of non-negative sectional curvature.*
(67) **Jimmy Petean*** and **Gabriel Paternain**, CIMAT (972-53-138)
- 4:20PM break
- 4:40PM *\hat{A} -genus on non-spin manifolds and classification of positive quaternion-Kähler 12-manifolds.*
(68) **Rafael Herrera***, University of California, Riverside, and **Haydee Herrera**, Tufts University (972-53-34)
- 5:10PM *$SO(3)$ monopoles and spin polynomials.* Preliminary report.
(69) **Paul Feehan**, Rutgers, and **Thomas G Leness***, Florida International University (972-58-29)

Special Session on Harmonic Analysis and Complex Analysis

3:00 PM – 6:00 PM

Room 124, Multipurpose Science and Technology

Organizers: **Xiaojun Huang**, Rutgers University
Song-Ying Li, University of California, Irvine

- 3:00PM *Mappings between holomorphically nondegenerate generic submanifolds in C^n .* Preliminary report.
(70) **Salah Baouendi**, UCSD (972-32-181)
- 3:30PM *The Schur class of the unit ball of C^n .*
(71) **Mihai Putinar**, University of California (972-47-51)
- 4:00PM *Algebraicity of real analytic hypersurfaces and blowing-down.*
(72) **Shanyu Ji**, Dept of Math, Univ. of Houston (972-32-53)
- 4:20PM break
- 4:40PM *Constructing plurisubharmonic functions and harmonic $(m, 0)$ forms.*
(73) **Lei Ni**, Stanford University (972-53-76)
- 5:10PM *A strong uniqueness theorem for planar vector fields.* Preliminary report.
(74) **Shiferaw Berhanu**, Temple University, and **Jorge Hounie***, Universidade Federal de São Carlos (972-35-50)
- 5:40PM *On the Oka principle in a Banach space.* Preliminary report.
(75) **Imre Patyi**, UC Irvine (972-32-126)

Special Session on Harmonic Analyses and Partial Differential Equations

3:00 PM – 4:50 PM

Room 220, Physical Sciences Classroom Bldg

Organizers: **Gustavo Ponce**, University of California Santa Barbara

- Gigliola Staffilani**, Stanford University
- 3:00PM *The Mathematical Theory of Self-organized-critical Systems.* (76)
Bjorn Birnir*, Dept. of Math. UCSB, **Jorge Hernandez**, UCSB, **Raisa Feldman**, Dept. of Statistics and Appl. Probab. UCSB, and **Terrence Smith**, Dept. of Geography, UCSB (972-35-144)
- 3:40PM *The motion of the free surface of a liquid.* (77)
Hans Lindblad, UCSD (972-35-115)
- 4:20PM *A cheap Caffarelli-Kohn-Nirenberg inequality for Navier-Stokes equations with hyper-dissipation.* (78)
Nets H Katz, Washington University, St. Louis, and **Natasa Pavlovic***, University of Illinois at Chicago (972-35-57)

Special Session on Operator Spaces, Operator Algebras, and Applications

3:00 PM – 5:50 PM **Room 118, Multipurpose Science and Technology**

Organizers: **Marius Junge**, University of Illinois, Urbana-Champaign
Timur Oikhberg, University of Texas and University of California Irvine

- 3:00PM *Grothendieck's Theorem for Operator Spaces (joint work with Dimitri Shlyakhtenko).* (79)
Gilles Pisier, Texas A&M University (972-46-41)
- 3:30PM *Nonlinear heat kernel analysis on von Neumann algebras.* (80)
Maria Gordina, University of California at San Diego (972-60-27)
- 4:00PM *A Functional Calculus for Completely Bounded L^∞ -bimodule Maps.* (81)
Vern I Paulsen*, University of Houston, and **Aristides Katavolos**, University of Athens (972-46-155)
- 4:30PM *Strongly singular masas in type II_1 factors.* (82)
Allan M Sinclair, University of Edinburgh, and **Roger R Smith***, Texas A&M University (972-46-118)
- 5:00PM *Ideals of operator algebras.* Preliminary report. (83)
David P Blecher, University of Houston (972-46-122)
- 5:30PM *Operator Hilbert Spaces without the Operator Approximation Property.* (84)
Alvaro Arias, University of Denver (972-46-120)

Special Session on Dynamical Systems of Billiard Type

3:00 PM – 6:25 PM **Room 240, Physical Sciences Classroom Bldg**

Organizers: **Marek Rychlik**, University of Arizona
Andrew Torok, University of Houston

- 3:00PM *A Central Limit Theorem for a large class of mixing maps.* (85)
Nicolai T Haydn, University of Southern California (972-37-151)
- 3:35PM *Absolutely Continuous Invariant Measures for Non-Uniformly Expanding Maps.* Preliminary report. (86)
Huyi Hu*, University of Southern California, and **Sandro Vaienti**, Centre de Physique Théorique, CNRS (972-37-183)
- 4:10PM *Rotations by $\pi/7$ and examples of rational piecewise rotations with an unbounded return time to one of the atoms.* Preliminary report. (87)
Arek Goetz, San Francisco State University (972-37-105)

- 4:45PM *Chaos in Accelerated Billiards.* (88)
Bruce N Miller, Texas Christian University (972-37-173)
- 5:20PM *Semi-dispersing billiards with a non-compact cusp.* (89)
Marco Lenci, SUNY at Stony Brook (972-37-82)
- 5:55PM *A convex generalized 3D stadium billiard.* Preliminary report. (90)
Gianluigi Del Magno, School of Mathematics, Georgia Institute of Technology (972-37-186)

Special Session on Symplectic Geometry

3:00 PM – 5:55 PM **Room 230, Physical Sciences Classroom Bldg**

Organizer: **Jonathan Weitsman**, University of California, Santa Cruz

- 3:00PM *Calculating the Cohomology Ring of Symplectic Quotients.* (91)
Rebecca F Goldin, University of Maryland (972-51-157)
- 3:45PM *The equivariant cohomology of the real loci of Hamiltonian symplectic manifolds.* (92)
Tara S Holm, MIT (972-53-123)
- 4:30PM *Non-degenerate abstract moment maps.* (93)
Viktor L Ginzburg, UC Santa Cruz (972-58-80)
- 5:15PM *Moment maps and reductive symmetric pairs.* Preliminary report. (94)
Reyer Sjamaar* and **Yi Lin**, Cornell University (972-58-81)

Session for Contributed Papers

4:00 PM – 5:55 PM **Room 101, Rowland Hall**

- 4:00PM *Approximating the Solution to the HJB PDE.* Preliminary report. (95)
Rod A Freed, California State University at Dominguez Hills (972-35-14)
- 4:15PM *Quasi-stationary states of Indy500 model.* (96)
Anastasia A Ruzmaikina*, University of Virginia, **Michael Aizenman**, Princeton University, and **Pierluigi Contucci**, University of Bologna (972-60-71)
- 4:30PM *Viscous flow over a flat surface, an integral solution of the Navier-Stokes PDE.* (97)
Leonard D'Attorre, AMS (972-00-199)
- 4:45PM *Mathematics, Today and Tomorrow.* (98)
Doc J. Castellano, PhD co., Maphics Dept., Simi Valley, CA (972-00-124)
- 5:00PM *Measure Dependable Extrafunctions.* (99)
Mark Burgin, UCLA (972-26-09)
- 5:15PM *Generalized Solutions for the Cauchy Problem for Partial Differential Equations.* Preliminary report. (100)
Mark Burgin and **James Ralston***, UCLA (972-35-05)
- 5:30PM *Intersection Homology theory via rectifiable currents.* (101)
Qinglan Xia, Rice University (972-49-133)
- 5:45PM *Static Coefficient and Unit Fields, Recent Ideas, Comments, and Outcomes.* Preliminary report. (102)
C.S. Felicitas, CFCTE Foundation and Gottlieb Library (972-86-08)

Sunday, November 11

Meeting Registration

8:00 AM – NOON Lobby, Rowland Hall

Special Session on Operator Spaces, Operator Algebras, and Applications

8:00 AM – 10:50 AM Room 118, Multipurpose Science and Technology

Organizers: **Marius Junge**, University of Illinois, Urbana-Champaign
Timur Oikhberg, University of Texas and University of California Irvine

- 8:00AM *Non-commutative Banach Principle and its applications*. Preliminary report.
Semyon N Litvinov, Pennsylvania State University, Hazleton (972-46-137)
- 8:30AM *C*-convex sets in representable bimodules*. Preliminary report.
Ciprian S Pop, Texas A&M University (972-46-179)
- 9:00AM *Local properties of TRO's associated with their linking C*-algebras*.
Manmohan Kaur and **Zhong-Jin Ruan***, University of Illinois at Urbana-Champaign (972-46-130)
- 9:30AM *A holomorphic characterization of TRO's and C*-algebras*.
Matthew P Neal*, Denison University, and **Bernie Russo**, University of California, Irvine (972-46-22)
- 10:00AM *Algebraic Structures Determined by 3 by 3 Matrix Geometry*.
Martin E Walter, University of Colorado, Boulder (972-46-43)
- 10:30AM *Commutators of ideals and modules of \mathbb{H}_∞ -factors*. Preliminary report.
Ken Dykema*, Texas A&M University, and **Nigel Kalton**, University of Missouri (972-47-127)

AMS Exhibit and Book Sale

8:00 AM – NOON Room 188, Rowland Hall

Special Session on Quantum Topology

8:30 AM – 10:50 AM Room 114, Rowland Hall

Organizers: **Louis Kauffman**, University of Illinois at Chicago
Jozef Przytycki, George Washington University
Fernando Souza, University of Waterloo

- 8:30AM *Algebraic versions of Markov's theorem in three-spaces*. Preliminary report.
Sofia Lambropoulou, National Technical University of Athens (972-57-153)
- 9:00AM *Diagrams of Divide Links*.
Sergei V Chmutov, Ohio State University, Mansfield (972-57-15)
- 9:30AM *Homfly polynomials and quantum $sl(N)$ invariants of decorated Hopf links*.
Hugh R Morton* and **Sascha G Lukac**, University of Liverpool, UK (972-57-18)
- 10:00AM *Quantum Morphing and the Jones Polynomial*. Preliminary report.
Oliver T Dasbach*, Oklahoma State University, and **Xiao-Song Lin**, UC Riverside (972-57-132)

- 10:30AM *Burau representation of string links and its applications*. Preliminary report.
Xiao-Song Lin, University of California, Riverside (972-57-116)

Special Session on Groups and Covering Spaces in Algebraic Geometry

8:30 AM – 10:50 AM Room 114, Multipurpose Science and Technology

Organizers: **Michael Fried**, University of California Irvine
Helmut Voelklein, University of Florida

- 8:30AM *The number of conjugacy classes in the upper triangular group*. Preliminary report.
John G Thompson, University of Florida (972-20-161)
- 9:10AM *Group representations and lattice minima*. Preliminary report.
Pham Huu Tiep, University of Florida (972-20-87)
- 9:50AM *The Hurwitz space of genus 2 covers of an elliptic curve*.
Ernst Kani, Queen's University at Kingston, Canada (972-14-195)
- 10:30AM *Automorphisms and elliptic subfields of genus 2 fields*.
Tony Shaska*, UC Irvine, and **Helmut Voelklein**, University of Florida (972-14-47)

Special Session on Harmonic Analysis and Complex Analysis

8:30 AM – 10:50 AM Room 124, Multipurpose Science and Technology

Organizers: **Xiaojun Huang**, Rutgers University
Song-Ying Li, University of California, Irvine

- 8:30AM discussion
- 9:00AM *Equivalence of real submanifolds in complex space*.
Linda P Rothschild, UCSD (972-32-172)
- 9:30AM *CR embeddings into strictly pseudoconvex hypersurfaces*. Preliminary report.
Peter F Ebenfelt, University of California, San Diego (972-32-72)
- 10:00AM *Normalization of complex-valued planar vector fields which degenerate along a real curve*.
Paulo D Cordaro*, University of S.Paulo - Brazil, and **Xianghong Gong**, University of Wisconsin, Madison (972-35-69)
- 10:30AM *A nonlinear Fourier transform*. Preliminary report.
Camil Muscalu, **Terence Tao** and **Christoph Thiele***, UCLA (972-42-176)

Special Session on Random and Deterministic Schrödinger Operators

8:35 AM – 10:50 AM Room 122, Multipurpose Science and Technology

Organizers: **Svetlana Jitomirskaya**, University of California Irvine
Abel Klein, University of California Irvine

- 8:35AM *On Spectral Properties of Periodic Polyharmonic Matrix Operators*.
Yulia Karpeshina, UAB (972-35-193)

- 9:15AM (123) *Charge transport in the adiabatic limit – proof of the Kubo formula for 2D Hall current.*
Alexander Elgart*, Jeffrey H Schenker and **Michael Aizenman**, Princeton University (972-81-139)
- 9:45AM (124) *Scattering for one-dimensional Schrödinger operators with slowly decaying potentials.*
Michael Christ, University of California, Berkeley, and **Alexander Kiselev***, University of Chicago (972-81-121)
- 10:25AM (125) *Localization and Delocalization for Random Polymer Chains.*
Svetlana Jitomirskaya, UC Irvine, **Hermann Schulz-Baldes**, UC Irvine and TU Berlin, and **Gunter Stolz***, Univ. of Alabama at Birmingham (972-82-38)

- 9:30AM (133) *Shedding and interaction of solitons in imperfect medium.*
Misha Chertkov*, **Ildar Gabitov**, LANL, **Igor Kolokolov**, Budker Institute, Russia, and **Vladimir Lebedev**, Landau Institute, Russia (972-82-119)
- 10:00AM (134) *Inertial Manifolds and Gevrey Regularity for the Moore–Greitzer model of Turbo–Machine Engine.*
Yejin Chung* and **Edriss S Titi**, University of California, Irvine (972-35-48)
- 10:30AM (135) *The Level-Set Method for Modeling Epitaxial Growth.*
Christian Ratsch*, **Russel Cafilisch**, **Myungjoo Kang**, UCLA, **Max Petersen**, UCLA and Georgia Tech, **Mark Gyure**, HRL Laboratories, and **Dimitri Vvedensky**, Imperial College (972-35-36)

Special Session on Extremal Metrics and Moduli Spaces

- 8:40 AM – 10:50 AM **Room 108, Rowland Hall**
- Organizers: **Steven Bradlow**, University of Illinois, Urbana-Champaign
Claude LeBrun, State University of New York, Stony Brook
Yat Sun Poon, University of California Riverside
- 8:40AM (126) *Canonical metrics in Kahler geometry.*
Gang Tian, M.I.T. (972-53-134)
- 9:30AM (127) *K Energy and K stability.*
Zhiqin Lu, UC Irvine (972-53-30)
- 10:00AM (128) *Direct images of stable triples.*
Donghoon Hyeon, Rice University (972-14-79)
- 10:30AM (129) *Hitchin-Kobayashi correspondence, moduli, quivers and vortices.* Preliminary report.
Luis Alvarez-Consul*, Department of Mathematics, University of Illinois at Urbana-Champaign, and **Oscar Garcia-Prada**, Departamento de Matematicas, Universidad Autonoma de Madrid (972-58-135)

Special Session on Topology of Algebraic Varieties

- 9:00 AM – 10:40 AM **Room 210, Physical Sciences Classroom Bldg**
- Organizers: **Eriko Hironaka**, Florida State University
Grigory Mikhalkin, University of Utah
- 9:00AM (130) *On arrangements of a plane real quintic curve with respect to a pair of lines.*
Anatoly B. Korchagin, Texas Tech University (972-14-10)
- 10:00AM (131) *On the Mapping Class Group of $S^3 \times S^3$.*
Nikolai A Krylov, University of Illinois at Chicago (972-55-106)

Special Session on Partial Differential Equations and Applications

- 9:00 AM – 10:55 AM **Room 120, Multipurpose Science and Technology**
- Organizer: **Edriss S. Titi**, University of California Irvine
- 9:00AM (132) *Solitary pulses in optical fibers with dispersion management at second and third order.*
Jamison T Moeser, Brown University, **Ildar R Gabitov***, Los Alamos National Laboratory, and **C.K.R.T. Jones**, Brown University (972-35-177)

Special Session on Harmonic Analyses and Partial Differential Equations

- 9:00 AM – 10:50 AM **Room 220, Physical Sciences Classroom Bldg**
- Organizers: **Gustavo Ponce**, University of California Santa Barbara
Gigliola Staffilani, Stanford University
- 9:00AM (136) *A characterization of finite sets that tile the integers.*
Izabella Laba, University of British Columbia (972-11-185)
- 9:40AM (137) *Besov-Morrey spaces and applications to PDE.*
Anna L Mazzucato, Yale University and MSRI, Berkeley (972-35-141)
- 10:20AM (138) *On the initial value problem for the fully non-linear 1-D Schrödinger equation.* Preliminary report.
Gustavo Ponce* and **Wee Keong Lim**, University of California-Santa Barbara (972-35-32)

Special Session on Dynamical Systems of Billiard Type

- 9:00 AM – 10:50 AM **Room 240, Physical Sciences Classroom Bldg**
- Organizers: **Marek Rychlik**, University of Arizona
Andrew Torok, University of Houston
- 9:00AM (139) *Periodic billiard orbits in non-euclidean polygons.* Preliminary report.
Eugene Gutkin, Santa Monica, CA (972-37-55)
- 9:40AM (140) *Mushrooms and Other Billiards With Divided Phase Space.*
Leonid A Bunimovich, Georgia Institute of Technology (972-37-64)
- 10:20AM (141) *Statistics and ergodicity on a class of partially hyperbolic symmetric attractors.*
Michael Field, University of Houston (972-58-131)

Special Session on Symplectic Geometry

- 9:00 AM – 10:45 AM **Room 230, Physical Sciences Classroom Bldg**
- Organizer: **Jonathan Weitsman**, University of California, Santa Cruz
- 9:00AM (142) *Constrained quantization of the harmonic oscillator.* Preliminary report.
Ranee Brylinski, Penn State Univ (972-81-109)
- 10:00AM (143) *Cohomological induction and the quantization of noncompact coadjoint orbits* Session Name: *Special Session on Symplectic Geometry.*
Gregg J Zuckerman, Mathematics Department, Yale University (972-22-86)

Invited Address

11:10 AM – NOON **Room 104, Rowland Hall**
 (144) *Dispersive Equations and Almost Conservation Laws.*
Gigliola Staffilani, Brown University (Providence, RI) and Stanford University (Stanford, CA) (972-35-200)

Invited Address

1:30 PM – 2:20 PM **Room 104, Rowland Hall**
 (145) *The topology of Hamiltonian Loop Group spaces.*
Jonathan Weitsman, University of California, Santa Cruz (972-00-202)

Special Session on Quantum Topology

3:00 PM – 5:20 PM **Room 114, Rowland Hall**
 Organizers: **Louis Kauffman**, University of Illinois at Chicago
Jozef Przytycki, George Washington University
Fernando Souza, University of Waterloo
 3:00PM (146) *Virtual Knots, Biquandles and Bioriented Quantum Algebras.*
Louis H Kauffman, University of Illinois at Chicago (972-57-147)
 3:30PM (147) *Extensions and cocycle invariants from twisted cohomology theory of quandles.*
J. Scott Carter, University of South Alabama, **Mohamed Elhamdadi** and **Masahico Saito***, University of South Florida (972-57-96)
 4:00PM (148) *Untwisted 2-cocycles and twisted 3-cocycles.*
J. Scott Carter*, University of South Alabama, **Mohamed Elhamdadi**, **Marina A Nikiforou** and **Masahico Saito**, University of South Florida (972-55-77)
 4:30PM (149) *A move on diagrams that generates S-equivalence of knots.*
Swatee Naik*, University of Nevada, Reno and University of California, Irvine, and **Theodore Stanford**, New Mexico State University (972-57-190)
 5:00PM (150) *3-manifold invariants and periodicity of homology spheres.*
Patrick M Gilmer*, Louisiana State University, **Joanna Kania-Bartoszyńska**, Boise State University, and **Jozef H Przytycki**, George Washington (972-57-100)

Special Session on Partial Differential Equations and Applications

3:00 PM – 5:25 PM **Room 120, Multipurpose Science and Technology**
 Organizer: **Edriss S. Titi**, University of California Irvine
 3:00PM (151) *Instabilities in fluid motion.*
Susan Friedlander, U of Illinois-chicago (972-76-175)
 3:30PM (152) *Space analyticity for solutions of the 2D Navier-Stokes system.*
Igor Kukavica, University of Southern California (972-35-150)
 4:00PM (153) *New scale of regularity spaces for the incompressible Euler equations.*
Eitan Tadmor, UCLA (972-35-33)

4:30PM (154) *Critical Thresholds vs. Finite Time Breakdown in Euler Dynamics.*
Hailiang Liu*, UCLA, Mathematics Department,, and **Eitan Tadmor**, UCLA (972-76-35)
 5:00PM (155) *A Pseudospectral Method for the Solution of the Partial Differential Equations in an Inverse Scattering Problem.*
Mohsen Razzaghi, Department of Mathematics and Statistics (972-35-67)

Special Session on Groups and Covering Spaces in Algebraic Geometry

3:00 PM – 5:50 PM **Room 114, Multipurpose Science and Technology**
 Organizers: **Michael Fried**, University of California Irvine
Helmut Voelklein, University of Florida
 3:00PM (156) *Basic algebras for sporadic simple groups in GAP.* Preliminary report.
Klaus Lux* and **T Hoffman**, University of Arizona (972-20-159)
 3:40PM (157) *Maximal automorphism groups of curves of small genus.* Preliminary report.
Kay Magaard, Wayne State University, **Sergey Shpectorov***, Bowling Green State University, and **Helmut Voelklein**, University of Florida (972-20-95)
 4:20PM break
 4:40PM (158) *Computing braid orbits with GAP.* Preliminary report.
Kay Magaard*, Wayne State University, **Sergey Shpectorov**, Bowling Green State University, and **Helmut Voelklein**, University of Florida (972-20-97)
 5:20PM (159) *Families of covers of the sphere and their images in M_g .* Preliminary report.
Helmut Voelklein, University of Florida (972-14-46)

Special Session on Random and Deterministic Schrödinger Operators

3:00 PM – 5:55 PM **Room 122, Multipurpose Science and Technology**
 Organizers: **Svetlana Jitomirskaya**, University of California Irvine
Abel Klein, University of California Irvine
 3:00PM (160) *Spectral analysis of two-dimensional quasicrystal models.* Preliminary report.
David Damanik, California Institute of Technology (972-81-56)
 3:30PM (161) *On the application of some M.G.Krein ideas to the spectral analysis of Schrödinger operators.*
Serguei Denissov, California Institute of Technology, Moscow State University (972-34-28)
 4:00PM (162) *Three-Dimensional Thin-film Photonic Crystals.*
Alexander Figotin, University of California at Irvine (972-78-142)
 4:30PM (163) *Nonlinear wavepacket interactions in periodic media.*
Anatoli V Babin, UC Irvine (972-78-54)
 5:00PM (164) *Fractional Moment Methods for Finite Rank Perturbations.* Preliminary report.
Robert J Sims*, University of California, Irvine, **Gunter Stolz**, University of Alabama at Birmingham, and **Sergi Naboko**, St. Petersburg, Russia (972-81-158)

- 5:30PM *Fractal Laplacians with singular continuous spectrum.* Preliminary report.
 ▶ (165) **Alexander Teplyaev**, UC Riverside (972-81-103)

Special Session on Extremal Metrics and Moduli Spaces

3:00 PM – 5:20 PM **Room 108, Rowland Hall**

Organizers: **Steven Bradlow**, University of Illinois, Urbana-Champaign
Claude LeBrun, State University of New York, Stony Brook
Yat Sun Poon, University of California Riverside

- 3:00PM *Three remarks on the geometry of special Lagrangian 3-cycles.* Preliminary report.
 (166) **Robert L Bryant**, Duke University (972-53-17)

- 3:50PM *On Moduli Spaces of Sasakian Structures.* Preliminary report.
 (167) **Charles P Boyer**, University of New Mexico (972-53-85)

4:20PM break

- 4:30PM *Deformations of Hypercomplex Structures associated to Heisenberg Groups.*
 (168) **Gueo V Grantcharov***, University of Connecticut, **Henrik Pedersen**, University of Southern Denmark, and **Yat Sun Poon**, University of California, Riverside (972-32-107)

- 5:00PM *Mirror symmetry, Langlands duality and Hitchin systems.*
 (169) **Tamas Hausel**, Miller Institute, University of California, Berkeley (972-14-19)

Special Session on Harmonic Analysis and Complex Analysis

3:00 PM – 4:20 PM **Room 124, Multipurpose Science and Technology**

Organizers: **Xiaojun Huang**, Rutgers University
Song-Ying Li, University of California, Irvine

- 3:00PM *Convex mappings in several complex variables.* Preliminary report.
 (170) **Sheng Gong**, University of California, San Diego (972-32-196)

- 3:30PM *Bundle rigidity of tangent bundles over Kahler manifolds.* Preliminary report.
 (171) **Bun Wong***, UC Riverside, **Wing Sum Cheung**, Univ. of Hong-Kong, and **Stephen Yau**, Univ. of Illinois at Chicago (972-32-197)

- 4:00PM *Nonlinear Riemann-Hilbert problems on domains in several complex variables.*
 (172) **Marshall A Whittlesey**, California State University, San Marcos (972-32-178)

Special Session on Operator Spaces, Operator Algebras, and Applications

3:00 PM – 5:50 PM **Room 118, Multipurpose Science and Technology**

Organizers: **Marius Junge**, University of Illinois, Urbana-Champaign
Timur Oikhberg, University of Texas and University of California Irvine

- 3:00PM *One parameter semigroups of endomorphisms of $B(H)$ and of factors of type II_1 .*
 (173) **Alexis Alevras**, UCSB (972-46-113)

- 3:30PM *Smoothness and strict convexity in operator spaces.*
 (174) **Edward G Effros**, UCLA (972-46-92)

- 4:00PM *Applications of free entropy to certain type II_1 -subfactors.*
 (175) **Marius B Stefan**, UCLA (972-46-189)

- 4:30PM *An alternative Daugavet Property.* Preliminary report.
 (176) **Miguel Martin**, Universidad de Granada, Spain (972-46-68)

- 5:00PM *The structure of Lie derivations on C^* -algebras (Work in progress with Armando R. Villena).* Preliminary report.
 (177) **Martin Mathieu**, Queen's University Belfast (972-46-60)

- 5:30PM *Lacunary matrices.*
 (178) **Asma Harcharras***, University of Missouri-Columbia, **Stefan Neuwirth**, Université de Franche-Comté, and **Krzysztof Oleszkiewicz**, Warsaw University (972-47-114)

Special Session on Symplectic Geometry

3:00 PM – 5:55 PM **Room 230, Physical Sciences Classroom Bldg**

Organizer: **Jonathan Weitsman**, University of California, Santa Cruz

- 3:00PM *Projective flatness in geometric quantization and the Maslov index.*
 (179) **Siye Wu**, University of Colorado, Boulder (972-53-62)

- 3:45PM *Equivariant cohomology of Grassmannians via equivariant puzzles.*
 (180) **Allen Knutson***, UC Berkeley, and **Terence Tao**, UCLA (972-05-93)

- 4:30PM *Dirac Operators on Homogeneous Loop Spaces.*
 (181) **Gregory D Landweber**, University of Oregon (972-81-88)

- 5:15PM *Symplectic geometry and symplectic topology.*
 (182) **Susan Tolman**, University of Illinois at Urbana-Champaign (972-51-191)

Bernard Russo
 Associate Secretary
 Irvine, California