Program of the Sessions

Los Angeles, California, April 3–4, 2004

Saturday, April 3

Meeting Registration

7:30 AM – 4:00 PM   **Foyer, Mark Taper Hall of Humanities**

AMS Exhibit and Book Sale

7:30 AM – 4:00 PM   **Room 106, Mark Taper Hall of Humanities**

Special Session on Contact and Symplectic Geometry, I

8:00 AM – 10:50 AM   **Room 110, Mark Taper Hall of Humanities**

Organizers: **Dragomir Dragnev**, University of Southern California

Ko Honda, University of Southern California

Sang Seon Kim, University of Southern California

8:00AM (1) *Higher Whitehead products in the symplectomorphism groups.* Preliminary report.
Olguta Buse, Michigan State University (996-53-157)

8:30AM (2) *Toric symplectic structures that vanish on circles.*
Margaret Symington, Georgia Institute of Technology (996-53-119)

9:00AM (3) *Invariants of real symplectic 4-manifolds and lower bounds in real enumerative geometry.*
Jean-Yves Welschinger, École normale supérieure de Lyon (996-53-60)

9:30AM (4) *Holomorphic open book decompositions and the Weinstein conjecture in dimension three.* Preliminary report.
Casim Abbas, Michigan State University (996-53-88)

10:00AM (5) *Legendrian regular fibres in Small Seifert Spaces.*
Hao Wu, MIT (996-57-46)

10:30AM (6) *Degeneration of the Moduli Space of J-Holomorphic Discs and Legendrian Contact Homology.*
Ke Zhu, Stanford University (996-53-48)

Special Session on Fluid Problems and Related Questions, I

8:00 AM – 10:50 AM   **Room 208, Mark Taper Hall of Humanities**

Organizers: **Maria Schonbek**, University of California Santa Cruz

Yuxi Zheng, Pennsylvania State University

8:00AM (7) *Shock Wave Cosmology Inside a White Hole.*
John Blake Temple, University of California, Davis (996-83-189)

8:30AM (8) *Critical Thresholds and Spectral Dynamics in Some Fluid Equations.*
Hailiang Liu, Iowa State University (996-35-58)

9:00AM (9) *"On the inviscid limit for 2D incompressible flow with Navier friction condition".*
Milton C. Lopes Filho, **Helena J. Nussenzveig Lopes***, IMECC - UNICAMP, and **Gabriela V. Planas**, ICMC - USP Sao Carlos (996-76-126)

9:30AM (10) *Enstrophy dissipation in 2D turbulence.*
Milton C Lopes Filho, IMECC-UNICAMP, **Anna L Mazzucato***, Penn State University, and **Helena J Nussenzveig Lopes**, IMECC-UNICAMP (996-76-120)

10:00AM (11) *Conditions for the Local Boundedness of Solutions to the Navier-Stokes System in Three Dimensions.*
Mike O'Leary, Towson University (996-76-87)

10:30AM (12) *Stability and regularity of suitably weak solutions of n-dimensional incompressible Navier-Stokes and MHD equations.*
Linghai John Zhang, Lehigh University (996-35-14)

The time limit for each contributed paper in the sessions is ten minutes. In the Special Sessions the time limit varies from session to session and within sessions. To maintain the schedule, time limits will be strictly enforced.
For papers with more than one author, an asterisk follows the name of the author who plans to present the paper at the meeting.
Papers flagged with a solid triangle (▶) have been designated by the author as being of possible interest to undergraduate students.
Abstracts of papers presented in the sessions at this meeting will be found in Volume 25, Issue 2 of *Abstracts of papers presented to the American Mathematical Society*, ordered according to the numbers in parentheses following the listings. The middle two digits, e.g., 897-**20**-1136, refer to the Mathematical Reviews subject classification assigned by the individual author. Groups of papers for each subject are listed chronologically in the *Abstracts*. The last one to four digits, e.g., 897-20-**1136**, refer to the receipt number of the abstract; abstracts are further sorted by the receipt number within each classification.

Special Session on Smooth Ergodic Theory and Related Topics, I

8:00 AM – 10:50 AM   Room 116, Mark Taper Hall of Humanities

Organizers: **Nicolai Haydn**, University of Southern California

Huyi Hu, Michigan State University

8:00AM *Livšic Regularity for Markov Towers.*
(13)   **Henk Bruin**, **Mark Holland**, Surrey University, and **Matthew Nicol***, University of Houston (996-37-106)

8:30AM *Extending Weak Convergence Results to Infinite*
(14)   *Time.* Preliminary report.
Cymra Haskell*, University of Southern California, **Matthew Nicol**, University of Houston, and **Ami Radunskaya**, Pomona College (996-37-155)

9:00AM *An infinite time functional central limit theorem for*
(15)   *compact group extensions of hyperbolic systems.*
Preliminary report.
Cymra Haskell, University of Southern California, **Matthew Nicol**, University of Houston, and **Ami E. Radunskaya***, Pomona College (996-37-154)

9:30AM *Statistical Limit Theorems for Suspension Flows.*
(16)   **Ian Melbourne**, University of Surrey, UK, and **Andrew Torok***, University of Houston (996-37-152)

10:00AM *Stability of rapid mixing for hyperbolic flows.*
(17)   **M J Field***, University of Houston, **I Melbourne**, University of Surrey, and **A Torok**, University of Houston (996-37-75)

10:30AM *A fascinating dynamics of a piecewise attractor*
▶ (18)   *with four atoms.*
Arek Goetz, San Francisco State University (996-37-77)

Special Session on Dynamic Equations on Time Scales: Theory and Applications, I

8:00 AM – 10:50 AM   Room 214, Mark Taper Hall of Humanities

Organizers: **John M. Davis**, Baylor University
Johnny Henderson, Baylor University
Qin Sheng, University of Dayton

8:00AM *Existence of Solutions to Second-Order BVPs on*
(19)   *Time Scales.* Preliminary report.
Lynn Erbe, **Allan C Peterson***, University of Nebraska-Lincoln, and **Chris C Tisdell**, University of New South Wales (996-39-79)

8:30AM *Oscillation of Second Order Delay Dynamic*
▶ (20)   *Equations.* Preliminary report.
Martin J Bohner, University of Missouri-Rolla (996-39-134)

9:00AM *A Measure Chain Cantilever Beam Problem.*
(21)   **Douglas R Anderson***, Concordia College, and **Joan Hoffacker**, University of Georgia (996-34-45)

9:30AM *Solution Matching for Dynamic Equations.*
(22)   Preliminary report.
Basant K Karna, Baylor University, Waco, TX (996-34-84)

10:00AM *Stability and Instability for Dynamic Equations on*
(23)   *Time Scales.*
Jo Hoffacker*, University of Georgia, and **Chris Tisdell**, University of New South Wales (996-34-59)

10:30AM *Periodic Linear Systems and Floquet Decomposition*
(24)   *on Time Scales.*
Jeffrey J. DaCunha* and **John M. Davis**, Baylor University (996-39-86)

Special Session on Partial Differential Equations, I

8:00 AM – 10:40 AM   Room 212, Mark Taper Hall of Humanities

Organizers: **Igor Kukavica**, University of Southern California

Qi S. Zhang, University of California Riverside

8:00AM *Travelling Fronts in Reactive Boussinesq Systems.*
(25)   **Lenya Ryzhik**, University of Chicago (996-35-109)

9:00AM *Fourth order nonlinear PDEs in image processing.*
(26)   **Andrea L. Bertozzi***, UCLA and Duke University, and **John B. Greer**, UCLA (996-35-43)

10:00AM *Dispersive and L^p-Smoothing Estimates for the*
(27)   *Linear Schrödinger Equation.* Preliminary report.
Michael Goldberg, Caltech (996-42-167)

Special Session on Financial Mathematics, I

8:30 AM – 10:50 AM   Room 213, Mark Taper Hall of Humanities

Organizers: **Jaksa Cvitanic**, University of Southern California

Janfeng Zhang, University of Southern California

8:30AM *A Riemann approach to financial calculus.*
(28)   **P Muldowney**, University of Ulster (996-60-93)

9:00AM *On the pricing of defaultable bonds and derivatives.*
(29)   Preliminary report.
George C Papanicolaou, Stanford University (996-60-201)

10:00AM *Fast Swaption Pricing under LIBOR Market Model*
(30)   *with Stochastic Volatility.*
Lixin Wu* and **Fan Zhang**, Claremont Graduate University (996-60-115)

10:30AM *Robust Replication of Volatility Derivatives.*
(31)   **Roger Lee**, Stanford University (996-90-203)

Special Session on Recent Advances in the Mathematical Analysis of Geophysical and Hydrodynamical Models, I

8:30 AM – 10:50 AM   Room 215, Mark Taper Hall of Humanities

Organizer: **Mohammed Ziane**, University of Southern California

8:30AM *Dynamic bifurcation in geophysical fluid dynamics.*
▶ (32)   **Tian Ma**, Indiana University & Sichuan University, and **Shouhong Wang***, Indiana University (996-35-169)

9:00AM *Prediction and Measurement of Turbulent Wakes in*
(33)   *a Stratified Fluid.*
Geoffrey R Spedding, University of Southern California (996-76-183)

9:30AM *The Maximum Principle and The Global Attractor*
(34)   *for the 2D Dissipative Quasi-Geostrophic Equation.*
Ning Ju, Oklahoma State University (996-35-170)

10:00AM *Leray-alpha model and boundary-layer turbulence.*
(35)   **Alexey Cheskidov**, Indiana University (996-76-181)

10:30AM *Variational analysis of vortex containment radius.*
▶ (36)   **Chjan C Lim**, RPI (996-76-81)

Special Session on Nonlinear and Harmonic Analysis, I

9:00 AM – 10:50 AM   Room 210, Mark Taper Hall of Humanities

Organizers: **Rowan Killip**, University of California Los Angeles

Christoph Martin Thiele

9:00AM   *Resonances for semiclassical Schrödinger operators*
(37)   *in dimension two.*
   Michael Hitrik, University of California, Los Angeles (996-35-174)

9:30AM   *Quasi-periodic solutions for nonlinear random*
(38)   *Schroedinger equation.*
   Wei-Min Wang, CNRS, Universite Paris Sud (996-42-158)

10:00AM   *The structure of the modified spectral shift function*
(39)   *and perturbation determinant associated with the*
   Schrodinger operators with square integrable
   potentials. Preliminary report.
   Alexei Rybkin, Univ of Alaska Fairbanks (996-47-190)

10:30AM   *Higher Order Sum Rules for Orthogonal*
(40)   *Polynomials on the Unit Circle.*
   Barry Simon, California Institute of Technology, and **Andrej Zlatos***, University of Wisconsin - Madison (996-33-96)

Special Session on Noncommutative Algebra and Algebraic Geometry, I

9:00 AM – 10:50 AM   Room 119, Mark Taper Hall of Humanities

Organizers: **Lance W. Small**, University of California San Diego

Paul Smith, University of Washington

9:00AM   *Cohomology of non-commutative $\mathbb{P}^1$-bundles.*
(41)   **Adam Nyman**, University of Montana, Missoula (996-14-113)

9:30AM   *Unramified Brauer groups of finite simple groups of*
(42)   *Lie type A_ℓ.*
   Fedor A Bogomolov, Courant Institute of Mathematical Sciences, and **Tihomir A Petrov***, University of California, Irvine (996-14-108)

10:00AM   *Intersection Theory for Quantum Ruled Surfaces.*
(43)   **Izuru Mori***, University of Toledo, and **S. Paul Smith**, University of Washington (996-14-67)

10:30AM   *Presenting q-Schur Algebras.*
(44)   **Anthony Giaquinto**, Loyola University Chicago (996-16-151)

Special Session on Complex and Hyperbolic Geometry, I

9:00 AM – 10:50 AM   Room 114, Mark Taper Hall of Humanities

Organizers: **Francis Bonahon**, University of Southern California

Dragomir Saric, University of Southern California

9:00AM   *Quasiconformal homogeneity of hyperbolic*
(45)   *manifolds.* Preliminary report.
   Petra Bonfert-Taylo, Wesleyan University, **Richard D Canary***, University of Michigan, **Gaven Martin**, University of Auckland, and **Edward C Taylor**, Wesleyan University (996-57-193)

9:30AM   *Universal Simultaneous Bending.* Preliminary report.
(46)   **Reza Chamanara**, Indiana University (996-51-85)

10:00AM   *The topology of the space of punctured torus*
(47)   *groups.*
   Kenneth Bromberg, University of Utah (996-57-153)

10:30AM   *The topology of the space of punctured torus*
(48)   *groups.*
   John Holt*, University of Illinois at Chicago, and **Juan Souto**, Universitat Bonn (996-57-91)

Special Session on Arithmetic Geometry and K-Theory, I

9:00 AM – 10:40 AM   Room 112, Mark Taper Hall of Humanities

Organizers: **Thomas Geisser**, University of Southern California

Wayne Raskind, University of Southern California

9:00AM   Discussion.

Invited Address

11:00 AM – 11:50 AM   Room 101, Mark Taper Hall of Humanities

▶ (49)   *Applications of Bilinear Maps to Cryptography.*
   Dan Boneh, Stanford University (996-68-80)

Invited Address

2:00 PM – 2:50 PM   Room 101, Mark Taper Hall of Humanities

▶ (50)   *Some basic questions in nonlinear Fourier analysis.*
   Christoph Thiele, UCLA (996-42-30)

Special Session on Nonlinear and Harmonic Analysis, II

3:00 PM – 5:20 PM   Room 210, Mark Taper Hall of Humanities

Organizers: **Rowan Killip**, University of California Los Angeles

Christopher Thiele, University of California Los Angeles

3:00PM   *Discrete Skew-Symmetric Orthogonal Polynomials*
(51)   *and Random Partitions.* Preliminary report.
   E Strahov* and **A Borodin**, Caltech (996-60-175)

3:30PM   *Matrix Models for Circular Ensembles.*
(52)   **Rowan Killip**, UCLA, and **Irina Nenciu***, Caltech (996-43-168)

4:00PM   *Paraproducts on the bi-disc.*
(53)   **Camil Muscalu**, Cornell University (996-42-82)

4:30PM   *A renormalized Riesz potential at critical exponent.*
(54)   **Mihai Putinar**, University of California at Santa Barbara (996-44-57)

5:00PM   *Noncommutative Bowen-Ruelle theorem, two weight*
▶ (55)   *Hilbert transform, and pressure of polynomial*
   maps. Preliminary report.
   Alexander Volberg*, Michigan State Univ., and **Peter Yuditskii**, Univ. of Linz (996-42-184)

Special Session on Modern Problems of Integration: Theory and Applications, I

3:00 PM – 5:50 PM   **Room 108, Mark Taper Hall of Humanities**

Organizer: **Mark Burgin**, University of California Los Angeles

3:00PM *Functional Integration without Integration.*
(56)   Preliminary report.
Louis Hirsch Kauffman, University of Illinois at Chicago (996-28-11)

3:30PM *Aspects of nonabsolute integration.*
(57)   **M. M. Rao**, University of California, Riverside (996-28-13)

4:00PM *The distributional Denjoy integral.* Preliminary
(58)   report.
Erik Talvila, University College of the Fraser Valley (996-26-24)

4:30PM *A Hilbert Space Structure for the Class of*
▶ (59) *KH-Integrable Functions.* Preliminary report.
Tepper L. Gill*, Howard University, **V Steadman**, University of the District of Columbia, and **W. W. Zachary**, Howard University (996-28-52)

5:00PM *A General Definition of the Feynman Integral.*
▶ (60) Preliminary report.
Tepper L. Gill* and **W. W. Zachary**, Howard University (996-28-53)

5:30PM *Computations for nonsquare constants of Orlicz*
(61)   *function spaces with Orlicz norm.*
Z. D. Ren, UC Riverside (996-46-23)

Special Session on Noncommutative Algebra and Algebraic Geometry, II

3:00 PM – 5:20 PM   **Room 119, Mark Taper Hall of Humanities**

Organizers: **Lance W. Small**, University of California San Diego

Paul Smith, University of Washington

3:00PM *Spectra of Quantized Hyperalgebras.*
(62)   **William Chin*** and **Leonid Krop**, DePaul University (996-16-124)

3:30PM *Weak Chow groups of noncommutative spaces.*
(63)   Preliminary report.
Christopher J Pappacena, Greenbelt, MD (996-14-137)

4:00PM *Endomorphism rings of finite global dimension.*
(64)   Preliminary report.
Graham J Leuschke, University of Toronto (996-13-148)

4:30PM *Left ideals and derivations in semiprime rings.*
(65)   **Charles P Lanski**, University of Southern California (996-16-73)

5:00PM *Projectively Simple Rings.*
(66)   **Z. Reichstein**, University of British Columbia, **D. Rogalski**, MIT, and **J. J. Zhang***, University of Washington (996-16-89)

Special Session on Contact and Symplectic Geometry, II

3:00 PM – 4:50 PM   **Room 110, Mark Taper Hall of Humanities**

Organizers: **Dragomir Dragnev**, University of Southern California

Ko Honda, University of Southern California

Sang Seon Kim, University of Southern California

3:00PM *Lagrangian collapse and degeneration of*
(67)   *holomorphic curves.*
Brett D Parker, Stanford (996-53-98)

3:30PM *Towards the Genus-One GW-Invariants of a Quintic*
(68)   *Threefold.*
Jun Li and **Aleksey Zinger***, Stanford (996-51-101)

4:00PM *Legendrian submanifolds in R^{2n+1}.* Preliminary
(69)   report.
Tobias Ekholm, Uppsala University, **John Etnyre**, University of Pennsylvania, and **Michael G Sullivan***, MSRI/University of Massachusetts (996-53-131)

4:30PM *Pinwheels and bypasses.* Preliminary report.
(70)   **Ko Honda**, University of Southern California, **William H Kazez** and **Gordana Matić***, University of Georgia (996-57-195)

Special Session on Fluid Problems and Related Questions, II

3:00 PM – 6:10 PM   **Room 208, Mark Taper Hall of Humanities**

Organizers: **Maria Schonbek**, University of California Santa Cruz

Yuxi Zheng, Pennsylvania State University

3:00PM *Global existence in 3d isotropic and incompressible*
(71)   *elastodynamics via the incompressible limit.*
Thomas C Sideris*, Uinversity of California, Santa Barbara, and **Becca Thomases**, Courant Institute of Mathematical Sciences (996-35-19)

3:30PM *Scattering for the Gross-Pitaevskii equation.*
(72)   **Tai-Peng Tsai**, University of British Columbia (996-35-196)

4:00PM *Kinetic limit for coagulating Brownian particles.*
(73)   Preliminary report.
Fraydoun Rezakhanlou* and **Alan Hammond**, UC Berkeley (996-35-47)

4:30PM *A New Large Total Variation Stability Result for the*
(74)   *Quadratic Nonlinear System Associated with the Compressible Euler Equations by Eigenvalue Methods.*
Thaddeus J Edens, University of California, Davis (996-35-173)

5:00PM *Modeling and Simulations of Ferrofluids.*
(75)   **Carlos Garcia-Cervera**, UCSB (996-76-160)

5:30PM *Shock-Waves, Black Holes, and the Einstein*
(76)   *equations.*
Jeffrey M. Groah, CSU Monterey Bay (996-76-61)

6:00PM *Clustering Techniques For Particle Methods And*
▶ (77) *Problems Related To Fluid Structures.* Preliminary report.
Bharat Khushalani, University of Southern California (996-76-25)

Special Session on Financial Mathematics, II

3:00 PM – 5:50 PM   **Room 213, Mark Taper Hall of Humanities**

Organizers: **Jaksa Cvitanic**, University of Southern California

Janfeng Zhang, University of Southern California

3:00PM *Pricing Take or Pay Swing Options.*
(78)   **Sheldon M Ross**, UC Berkeley (996-90-97)

4:00PM *Debt Policy, Corporate Taxes, and Discount Rates.*
(79) **Mark Grinblatt** and **Jun Liu***, UCLA (996-90-44)

5:00PM *On Optimal Investment in the Long Run: Rank*
(80) *Dependent Expected Utility as a "Bridge" between*
the Maximum-Expected-Log and Maximum-
Expected-Utility Criteria.
Vladimir I Rotar, San Diego State University
(996-90-40)

5:30PM *MLE of Parameters in the Drifted Brownian Motion*
(81) *and Its Error.* Preliminary report.
Weian Zheng* and **Lemee Nakamura**, UC Irvine
(996-60-95)

Special Session on Smooth Ergodic Theory and Related Topics, II

3:00 PM – 5:50 PM   Room 116, Mark Taper
                                        Hall of Humanities

Organizers: **Nicolai Haydn**, University of Southern
California

Huyi Hu, Michigan State University

3:00PM *Foliations: harmonic measures, von Neumann*
(82) *algebras and resilient leaves.*
Alberto Candel, CSUN (996-37-199)

3:30PM *Counterexamples that show that n-dimensional*
(83) *hyperbolic space does not retain rigidity in the*
Finsler category. Preliminary report.
Florence Newberger, California State University,
Long Beach (996-37-149)

4:00PM *Partially hyperbolic dynamical systems and*
(84) *subriemannian geometry.* Preliminary report.
Slobodan N Simić, University of California, Berkeley
(996-37-140)

4:30PM *Rigidity of the measurable structure for algebraic*
(85) *actions of higher rank abelian groups.*
Boris Kalinin*, University of South Alabama, and
Ralf Spatzier, University of Michigan (996-37-127)

5:00PM *"On Newhouse phenomenon (of infinitely many*
▶ (86) *coexisting sinks)"* (joint w A. Gorodetsky).
Vadim Y Kaloshin, Caltech (996-37-178)

5:30PM *Minimizing methods for the N-body problem*
(87) *without equal-mass constraint.*
Kuo-Chang Chen, Department of Mathematics,
University of Arizona (996-37-185)

Special Session on Dynamic Equations on Time Scales: Theory and Applications, II

3:00 PM – 5:50 PM   Room 214, Mark Taper
                                        Hall of Humanities

Organizers: **John M. Davis**, Baylor University

Johnny Henderson, Baylor University

Qin Sheng, University of Dayton

3:00PM *Applications of Time Scales to Real Time*
(88) *Communication Networks.*
Ian A Gravagne*, **John M Davis**, **Jeffrey Dacunha**
and **Bob Marks**, Baylor University (996-93-62)

3:30PM *Time Scale Nonregressivity in Switched Linear*
(89) *Circuits.*
Robert Jackson Marks*, **Ian Gravagne**, **John M**
Davis and **Jeffrey J DaCunha**, Baylor University
(996-37-129)

4:00PM *Biological applications of dynamic equations on a*
(90) *time scale.* Preliminary report.
Diana M Thomas, Montclair State University
(996-92-55)

4:30PM *Data Combination in Phylogenetics: Optimal*
(91) *Strategies in the Face of Poor Input.*
Sudhindra R Gadagkar, University of Dayton
(996-92-114)

5:00PM *Applications of Time Scales to Numerical Analysis.*
(92) **Bree Ettinger**, University of Georgia (996-65-72)

5:30PM *An Exploration of Combined Dynamic Derivatives*
(93) *on Time Scales for Computational Applications.*
Preliminary report.
Qin Sheng* and **Mai Fadag**, University of Dayton
(996-34-41)

Special Session on Complex and Hyperbolic Geometry, II

3:00 PM – 5:50 PM   Room 114, Mark Taper
                                        Hall of Humanities

Organizers: **Francis Bonahon**, University of
Southern California

Dragomir Saric, University of Southern
California

3:00PM *Deformations and Self-Maps of the Universal*
(94) *Hyperbolic Solenoid.*
Dragomir Saric, University of Southern California
(996-30-192)

3:30PM *Arc Complexes.*
(95) **Robert C. Penner**, Univ.Southern Calif. (996-57-34)

4:00PM *Schwarz's lemma and Teichmüller contraction for*
(96) *generalized Teichmüller spaces.*
Sudeb Mitra, Queens College, CUNY (996-32-146)

4:30PM *Triangulations of mapping tori over the punctured*
▶ (97) *torus.* Preliminary report.
Francois Gueritaud, ENS Paris, USC Los Angeles
(996-51-83)

5:00PM *Counting in Kleinian groups with torsion.*
(98) Preliminary report.
William Abikoff*, University of Connecticut at
Storrs, and **William J. Harvey**, Kings College,
London (996-57-186)

5:30PM *Moduli spaces of Kleinian groups.* Preliminary
(99) report.
Peter A Storm, University of Chicago (996-57-65)

Special Session on Arithmetic Geometry and K-Theory, II

3:00 PM – 4:40 PM   Room 112, Mark Taper
                                        Hall of Humanities

Organizers: **Thomas Geisser**, University of
Southern California

Wayne Raskind, University of
Southern California

3:00PM Discussion.

Special Session on Recent Advances in the Mathematical Analysis of Geophysical and Hydrodynamical Models, II

3:00 PM – 5:20 PM   Room 215, Mark Taper
                                        Hall of Humanities

Organizer: **Mohammed Ziane**, University of
Southern California

3:00PM *Mathematical Analysis of Certain Geophysical*
(100) *Models.*
Edriss S. Titi, University of Califoria - Irvine &
Weizmann Institute of Science (996-86-50)

3:30PM *Decomposing weather patterns: recent progress.*
(101) **Paul K. Newton**, University of Southern California
(996-76-90)

4:00PM *Numerical Simulations of Rotating Turbulence*
(102) *Using Truncated Navier-Stokes Equations.*
J A Domaradzki* and **X Yang**, University of Southern California (996-76-123)

4:30PM *Dependence of turbulence and the global attractor*
(103) *on the forcing in the 2D Navier-Stokes equation.*
Preliminary report.
R. Dascaliuc, **C. Foias**, Texas A&M, and **M. S. Jolly***, Indiana University (996-76-198)

5:00PM *Regularity and Dissipativity in Gevrey Classes for*
▶ (104) *Solutions of a Smoluchowski Equation.* Preliminary report.
Jesenko Vukadinovic, University of Wisconsin, Madison (996-35-163)

Special Session on Partial Differential Equations, II

3:00 PM – 5:40 PM   Room 212, Mark Taper
Hall of Humanities

Organizers: **Igor Kukavica**, University of Southern California

Qi S. Zhang, University of California Riverside

3:00PM *On Schroedinger systems.* Preliminary report.
(105) **Wilhelm Schlag**, Caltech (996-35-161)

4:00PM *On the helicity in 3D-periodic Navier-Stokes*
(106) *equations.* Preliminary report.
Luan Thach Hoang*, Texas A&M University, **Ciprian Foias**, Texas A&M University and Indiana University, and **Basil Nicolaenko**, Arizona State University (996-35-22)

5:00PM *Quenching of flames by large amplitude fluid*
(107) *advection.*
Alexander Kiselev and **Andrej Zlatos***, University of Wisconsin - Madison (996-35-128)

Session for Contributed Papers

3:00 PM – 5:10 PM   Room 118, Mark Taper
Hall of Humanities

3:00PM *A short proof of a theorem of Eilenberg and Moore.*
(108) **Maria S. Voloshina**, California State University, Fresno (996-55-32)

3:15PM *Complementary Topologies and Their Relation to*
(109) *Non-Archimedean Topologies.* Preliminary report.
Rahim G Karimpour, Southern Illinois University Edwardsville (996-54-107)

3:30PM *Topologizing the Space of All Generalized Riemann*
(110) *Integrable Functions.* Preliminary report.
J Alan Alewine, McKendree College (996-28-150)

3:45PM *Topological Spaces of Extended Hypernumbers.*
(111) Preliminary report.
Mark Burgin, UCLA (996-54-162)

4:00PM *Finite-Monotonicity of Dirichlet-Eigenfunctions of*
▶ (112) *the Laplacian on the Sierpinski Gasket.*
M Ureyen, **B Demir**, **V Dzhafarov** and **S Kocak***, Anadolu University (996-31-09)

4:15PM *Derivation of Rotational Frequencies for Relative*
▶ (113) *Equilibrium Configurations of the N-vortex Problem.*
Bharat Khushalani, University of Southern California (996-37-28)

4:30PM *Three dimensional, time dependent, Navier-Stokes*
(114) *PDE, a formal analytical solution.*
Leonard D'Attorre, Dana Point, California (996-35-117)

4:45PM *Solutions to Well-Known PDEs When Coefficients Are*
(115) *Unknown.*
Senem Alkan*, Universita' Bocconi, and **Rod Freed**, California State University (996-35-171)

5:00PM *Power Numbers.*
▶ (116) **Avery S. Zoch**, equationgallery.com (996-05-06)

Sunday, April 4

Meeting Registration

8:00 AM – NOON   **Foyer, Mark Taper Hall of Humanities**

Special Session on Contact and Symplectic Geometry, III

8:00 AM – 10:50 PM   Room 110, Mark Taper
Hall of Humanities

Organizers: **Dragomir Dragnev**, University of Southern California

Ko Honda, University of Southern California

Sang Seon Kim, University of Southern California

8:00AM *The failure of the parametric h-principle for maps*
(117) *with prescribed Jacobian.* Preliminary report.
Joseph L Coffey, Courant Institute of Mathematical Sciences (996-53-188)

8:30AM *Lagrangian intersections and the Serre spectral*
(118) *sequence.*
Jean-Francois Barraud, Universite de Lille 1, and **Octav Cornea***, University of Montreal (996-53-132)

9:00AM *Branching Floer homology: the definition.*
(119) Preliminary report.
Viktor Ginzburg, University of California, Santa Cruz, **Basak Gurel*** and **Ely Kerman**, SUNY at Stony Brook (996-53-159)

9:30AM *Branching Floer homology and the Hofer-Zehnder*
(120) *capacity.* Preliminary report.
Viktor L Ginzburg, UC Santa Cruz, **Basak Z Gurel** and **Ely Kerman***, SUNY Stony Brook (996-58-138)

10:00AM *Instanton Floer homology with Lagrangian*
(121) *boundary conditions.*
Katrin Wehrheim, Princeton University (996-58-139)

10:30AM Discussion

Special Session on Fluid Problems and Related Questions, III

8:00 AM – 10:50 AM   Room 208, Mark Taper
Hall of Humanities

Organizers: **Maria Schonbek**, University of California Santa Cruz

Yuxi Zheng, Pennsylvania State University

8:30AM *Local estimates on two linear parabolic equations*
(122) *with singular coefficients.*
Qi S. Zhang, Math. Department, University of California Riverside (996-35-71)

9:00AM *On the existence of subsonic solutions for*
(123) *self-similar problems in 2-dimensional conservation laws.*
Eun Heui Kim, California State University at Long Beach (996-35-69)

9:30AM *Critical dissipation and global regularity.*
(124) **Jiahong Wu**, Oklahoma State University (996-35-54)

10:00AM *Compressible Flows with Navier Boundary*
(125) *Conditions.*
David Hoff, Indiana University (996-76-17)

10:30AM *Probability Methods Applied to the Navier-Stokes*
(126) *Equations.* Preliminary report.
Enrique A Thomann, Oregon State University
(996-76-164)

Special Session on Smooth Ergodic Theory and Related Topics, III

8:00 AM – 10:50 AM   Room 116, Mark Taper
Hall of Humanities

Organizers: **Nicolai Haydn**, University of Southern
California
Huyi Hu, Michigan State University

8:00AM *Asymptotic Behavior near Rays of Dynamic*
(127) *Equilibria in Homogenous Systems.*
Marek R Rychlik*, University of Arizona, and **Weiye
Li**, Los Alamos National Laboratory (996-91-125)

8:30AM *Degenerate Homoclinic Intersections in $\mathbb{R}^n$.*
(128) **Victoria Rayskin**, UCLA (996-37-100)

9:00AM *Strange attractors in periodically kicked Chua's*
(129) *circuit.* Preliminary report.
Qiudong Wang, University of Arizona (996-37-141)

9:30AM *Return times of polynomials are meta-Fibonacci*
(130) *numbers.*
Nathaniel D Emerson, CSU Channel Islands
(996-37-133)

10:00AM *Random sources and sinks for stochastic dynamical*
(131) *systems.* Preliminary report.
Peter H Baxendale, University of Southern
California (996-37-112)

10:30AM *Two Point Boundary Value Problems in Dynamical*
▶ (132) *Systems.*
J JP Veerman*, Portland State University, and **J A
Bernhard**, University of Puget Sound (996-37-105)

Special Session on Dynamic Equations on Time Scales: Theory and Applications, III

8:00 AM – 10:50 AM   Room 214, Mark Taper
Hall of Humanities

Organizers: **John M. Davis**, Baylor University
Johnny Henderson, Baylor University
Qin Sheng, University of Dayton

8:00AM *Nonlinear Second Order Oscillation.* Preliminary
(133) report.
Martin Bohner, University of Missouri-Rolla, **Lynn
Erbe*** and **Allan C Peterson**, University of
Nebraska-Lincoln (996-39-78)

8:30AM *On Solutions of Quasilinear Dynamic Equations.*
▶ (134) Preliminary report.
Elvan Akin-Bohner, University of Missouri-Rolla
(996-39-135)

9:00AM *Partial Dynamic Equations on Time Scles.*
▶ (135) **B J Jackson**, University of Georgia (996-35-31)

9:30AM *Towards Schroedinger's Theory on Time Scales.*
▶ (136) Preliminary report.
Andreas Ludwig Ruffing, Arizona State University
(996-39-68)

10:00AM *Asymptotic solutions and error estimates for linear*
(137) *systems of difference and differential equations.*
Sigrun Bodine, University of Puget Sound, and **D A
Lutz***, San Diego State University (996-39-42)

10:30AM *Bocher's type theorems for dynamic equations on*
(138) *time scales.* Preliminary report.
Vladimir Burd, Yaroslavl State University, and
Alexei Bourd*, QUALCOMM Inc. (996-39-104)

Special Session on Complex and Hyperbolic Geometry, III

8:00 AM – 10:50 AM   Room 114, Mark Taper
Hall of Humanities

Organizers: **Francis Bonahon**, University of
Southern California
Dragomir Saric, University of Southern
California

8:00AM *3-manifolds, essential laminations and group*
(139) *actions.*
Sergio R Fenley, Florida State University
(996-57-63)

8:30AM *Analyticity of length functions of geodesic currents*
(140) *for convex co-compact Kleinian groups and the*
Weil-Peterson metric.
Martin J Bridgeman*, Boston College, and **Edward
Taylor**, Wesleyan University (996-51-121)

9:00AM *Quantum hyperbolic geometry.* Preliminary report.
(141) **Francis Bonahon** and **Xiaobo Liu***, University of
Southern California (996-57-118)

9:30AM *Barycentric extensions of monotone maps of the*
(142) *circle: a dynamical approach.*
William Abikoff, University of Connecticut,
Clifford J Earle*, Cornell University, and **Sudeb
Mitra**, Queens College of CUNY (996-30-144)

10:00AM *Random holomorphic iterations and degenerate*
(143) *subdomains.*
Linda Keen and **Nikola Lakic***, CUNY (996-30-180)

10:30AM *Distortion of the Exponent of Convergence in Space.*
(144) **Edward C Taylor***, **Petra Bonfert-Taylor**, Wesleyan
University, and **Martin Bridgeman**, Boston College
(996-30-66)

Special Session on Partial Differential Equations, III

8:00 AM – 10:40 AM   Room 212, Mark Taper
Hall of Humanities

Organizers: **Igor Kukavica**, University of Southern
California
Qi S. Zhang, University of California
Riverside

8:00AM *The L^p Boundedness of Riesz Transforms for*
(145) *Second Order Elliptic Operators.* Preliminary report.
Zhongwei Shen, University of Kentucky (996-35-76)

9:00AM *On the motion of an elastic solid inside of an*
(146) *incompressible viscous fluid.*
Steve Shkoller, UC Davis (996-35-202)

10:00AM *On depletion of the vortex-stretching term in the 3D*
(147) *Navier-Stokes equations.*
Zoran Grujic*, University of Virginia, and **Anastasia
Ruzmaikina**, Purdue University (996-35-143)

AMS Exhibit and Book Sale

8:00 AM – NOON   Room 106, Mark Taper Hall of Humanities

Special Session on Nonlinear and Harmonic Analysis, III

8:30 AM – 10:50 AM   **Room 210, Mark Taper Hall of Humanities**

Organizers: **Rowan Killip**, University of California Los Angeles

            Christopher Thiele, University of California Los Angeles

8:30AM   *Uniform Convergence in the Multiplicative Ergodic*
(148)   *Theorem and Cantor Spectrum.*
     David Damanik*, California Institute of Technology, and **Daniel Lenz**, TU Chemnitz (996-37-37)

9:00AM   *Anderson localization for the discrete*
(149)   *one-dimensional quasi-periodic Schroedinger operator with potential defined by a Gevrey-class function.*
     Silvius Klein, UCLA (996-47-35)

9:30AM   *PDE analog of the Szego case in the theory of*
(150)   *polynomials orthogonal on the circle.*
     Serguei Denissov, Caltech (996-35-136)

10:00AM   *Hilbert transform along a $C^{1+\epsilon}$ vector field.*
(151)   **Michael Lacey**, Georgia institute of Technology, and **Xiaochun Li***, UCLA (996-42-172)

10:30AM   *A random construction with applications to mixed*
(152)   *norm inequalities.* Preliminary report.
     Michael Christ*, UC Berkeley, and **Andreas Seeger**, University of Wisconsin (996-42-187)

Special Session on Modern Problems of Integration: Theory and Applications, II

8:30 AM – 10:50 AM   **Room 108, Mark Taper Hall of Humanities**

Organizer: **Mark Burgin**, University of California Los Angeles

8:30AM   *Stochastic integrals in topological vector spaces.*
(153)   Preliminary report.
     R. Mikulevicius, University of Southern California (996-60-103)

9:00AM   *The L^r Henstock-Kurzweil Integral.*
(154)   **Paul M Musial***, Chicago State University, and **Yoram Sagher**, Florida Atlantic University (996-28-122)

9:30AM   *A Riemann approach to Feynman integrals.*
(155)   **P Muldowney**, University of Ulster (996-28-94)

10:00AM   *The Fundamental Theorem of Calculus for infinite*
▶ (156)   *intervals.* Preliminary report.
     Mark Burgin, UCLA (996-28-51)

10:30AM   *A Local Maximal Function Simplifying Measure*
(157)   *Differentiation.*
     Peter A. Loeb, University of Illinois, Champaign-Urbana (996-28-33)

Special Session on Financial Mathematics, III

8:30 AM – 10:50 AM   **Room 213, Mark Taper Hall of Humanities**

Organizers: **Jaksa Cvitanic**, University of Southern California

            Janfeng Zhang, University of Southern California

8:30AM   *Constructing the Portfolio Which Most Closely*
(158)   *Matches the Investor's Desired Risk-Versus-Return Trade-Off Schedule.*
     Rod Freed*, California State University at Dominguez Hills, and **Senem Alkan**, Universita' Bocconi (996-60-64)

9:00AM   *Quasi-Monte Carlo Simulation for American*
▶ (159)   *Options.*
     Russel Caflisch* and **Suneal Chaudhary**, UCLA (996-90-102)

10:00AM   *Optimal portfolio allocation and consumption for*
(160)   *mean-reverting returns and complete markets.* Preliminary report.
     Florence J. Lin, University of Southern California (996-90-156)

10:30AM   *Two-sided barrier problems with jump-diffusions.*
▶ (161)   Preliminary report.
     Alan L. Lewis, Newport Beach, Ca (996-60-147)

Special Session on Noncommutative Algebra and Algebraic Geometry, III

9:00 AM – 10:50 AM   **Room 119, Mark Taper Hall of Humanities**

Organizers: **Lance W. Small**, University of California San Diego

            Paul Smith, University of Washington

9:00AM   *Group actions on central simple algebras: A*
(162)   *geometric approach.* Preliminary report.
     Zinovy Reichstein, University of British Columbia, and **Nikolaus Vonessen***, University of Montana (996-16-27)

9:30AM   *Orders on surfaces with numerically trivial*
(163)   *canonical class.* Preliminary report.
     Daniel Chan, University of New South Wales, and **Rajesh S. Kulkarni***, Michigan State University (996-16-200)

10:00AM   *Lie Superalgebras, Clifford Algebras, Induced*
(164)   *Modules and Nilpotent Orbits.*
     Ian M. Musson, UW-Milwaukee (996-16-70)

10:30AM   *Fixed Subrings of Noetherian Graded Regular Rings.*
(165)   **Ellen E Kirkman*** and **James J Kuzmanovich**, Wake Forest University (996-16-179)

Special Session on Arithmetic Geometry and K-Theory, III

9:00 AM – 10:40 AM   **Room 112, Mark Taper Hall of Humanities**

Organizers: **Thomas Geisser**, University of Southern California

            Wayne Raskind, University of Southern California

9:00AM   Discussion.

Special Session on Recent Advances in the Mathematical Analysis of Geophysical and Hydrodynamical Models, III

9:00 AM – 10:50 AM   **Room 215, Mark Taper Hall of Humanities**

Organizer: **Mohammed Ziane**, University of Southern California

9:00AM   *Emergence of Large Scale Coherent Structure under*
(166)   *Small Scale Bombardment.*
     Andrew J Majda, New York University, and **Xiaoming Wang***, Florida State University and Iowa State University (996-76-197)

9:30AM *On the solutions of the 2D periodic Navier-Stokes*
(167) *equations with bounded Dirichlet quotients.*
Radu Dascaliuc, Texas A&M University
(996-35-145)

10:00AM *A Mathematical Model For Recognition on*
(168) *Earthquake Warnings.*
Chuan-Gan Hu, Nankai University (996-86-18)

10:30AM *Exponential attractors of the three dimensional*
(169) *Navier-Stokes-alpha equations for uniformly*
rotating geophysical flows. Preliminary report.
Bong-Sik Kim*, Department of Mathematics, The
Ohio State University, and **Basil Nicolaenko**,
Department of Mathematics and Statistics, Arizona
State University (996-76-92)

AMS Special Presentation, Part I

9:00 AM – 10:50 AM   Room 118, Mark Taper
                                      Hall of Humanities

TA development using case studies: A workshop for
faculty
Organizer: **Solomon Friedberg**, Boston College

Invited Address

11:00 AM – 11:50 AM   Room 101, Mark
                                      Taper Hall of Humanities

(170) *Fluid Equations and their asymptotic behavior.*
Maria Elena Schonbek, University of California
Santa Cruz (996-35-74)

AMS Special Presentation, Part II

NOON – 1:50 PM   Room 118, Mark Taper Hall of Humanities

TA development using case studies: A workshop for
faculty
Organizer: **Solomon Friedberg**, Boston College

Invited Address

2:00 PM – 2:50 PM   Room 101, Mark Taper
                                      Hall of Humanities

(171) *Noncommutative algebraic geometry.*
Paul Smith, University of Washington (996-00-03)

Special Session on Noncommutative Algebra and Algebraic Geometry, IV

3:00 PM – 4:20 PM   Room 119, Mark Taper
                                      Hall of Humanities

Organizers: **Lance W. Small**, University of
California San Diego

Paul Smith, University of Washington

3:00PM *Simplicity of noncommutative Dedekind domains.*
(172) **K R Goodearl***, University of California at Santa
Barbara, and **J T Stafford**, University of Michigan
(996-16-116)

3:30PM *Classifying finite dimensional representations with*
(173) *squarefree tops.*
Birge Huisgen-Zimmermann, University of
California at Santa Barbara (996-16-111)

4:00PM *Symplectic reflection algebras.* Preliminary report.
(174) **Iain Gordon**, University of Glasgow (visiting UCSB)
(996-16-56)

Special Session on Fluid Problems and Related Questions, IV

3:00 PM – 5:50 PM   Room 208, Mark Taper
                                      Hall of Humanities

Organizers: **Maria Schonbek**, University of
California Santa Cruz

Yuxi Zheng, Pennsylvania State
University

3:00PM *2-D Navier-Stokes Equations with Rough Initial*
(175) *Data.*
Matania Ben-Artzi, Hebrew University of Jerusalem
(996-76-130)

3:30PM *Constructing regular self-similar solutions to the*
(176) *3D NSE originating at singular and arbitrary large*
initial data.
Zoran Grujic, University of Virginia (996-35-142)

4:00PM *Steady Weak Shock Mach Reflection.*
(177) **John K Hunter*** and **Allen M Tesdall**, University of
California at Davis (996-76-166)

4:30PM *Nonlinear stability of a quasi-geostrophic model of*
(178) *zonal jets.*
Mohammed B Ziane*, University of Southern
California, **Edriss Titi**, University of California,
Irvine, and **Lee Panetta**, Texas A&M University
(996-35-182)

5:00PM *Length of vorticity nodal sets for solutions of the 2D*
(179) *Navier-Stokes equations.*
Igor Kukavica, University of Southern California
(996-35-176)

5:30PM *Global Regularity for Certain Analytic Turbulence*
(180) *Models.* Preliminary report.
Edriss S. Titi, University of California - Irvine &
Weizmann Institute of Science (996-76-49)

Special Session on Smooth Ergodic Theory and Related Topics, IV

3:00 PM – 3:50 PM   Room 116, Mark Taper
                                      Hall of Humanities

Organizers: **Nicolai Haydn**, University of Southern
California

Huyi Hu, Michigan State University

3:00PM *On the Universality of Bosco's Rule.*
► (181) **Kellie Michele Evans**, California State University,
Northridge (996-37-165)

3:30PM *Complex dynamics in learning.* Preliminary report.
► (182) **Thomas J. Taylor**, Arizona State University
(996-37-205)

Special Session on Partial Differential Equations, IV

3:00 PM – 4:40 PM   Room 212, Mark Taper
                                      Hall of Humanities

Organizers: **Igor Kukavica**, University of Southern
California

Qi S. Zhang, University of California
Riverside

3:00PM *Nonlinear Schrodinger regimes for nonlinear*
(183) *Maxwell equations in periodic media.*
Anatoli Babine, University of California, Irvine
(996-35-177)

4:00PM *On the Solvability for Parabolic Equations with one*
(184) *Space Variable.*
Martín Lopez Morales, Monterrey Institute of
Technology (996-40-08)

Michel L. Lapidus
Associate Secretary
Riverside, California