
Program of the Sessions

Las Vegas, Nevada, April 10-11, 1999

Saturday, April 10

Meeting Registration

7:30 AM - 5:00 PM Lobby, 2nd Floor, Classroom Building Complex C

AMS Exhibit and Book Sale

7:30 AM - 5:00 PM Lobby, 2nd Floor, Classroom Building Complex C

Special Session on Graph Theory

8:00 AM - 10:50 AM Room 213, Classroom Building Complex C

Organizers: **Hung-Lin Fu**, National Chiao-Tung University-Taiwan
Chris A. Rodger, Auburn University
Michelle Schultz, University of Nevada, Las Vegas

- 8:00AM (1) *Irreducible snarks*. Preliminary report.
Martin Skoviera, Comenius University, Bratislava, Slovakia (942-05-141)
- 8:30AM (2) *Equitable Coloring of Disconnected Graphs*.
Bor-Liang Chen*, National Taichung Institute of Commerce, and **Chih-Hung Yen**, Tunghai University (942-05-152)
- 9:00AM (3) *A Coloring Problem*. Preliminary report.
▶ **Hong-Jian Lai**, West Virginia University (942-05-30)
- 9:30AM (4) *Chromatic Index of Graphs*.
▶ **S. Louis Hakimi**, University of California, Davis (942-05-94)
- 10:00AM (5) *Multi list colorings of the two-clique graph: an efficient algorithm*.
Dean G. Hoffman, Auburn University (942-05-125)
- 10:30AM (6) *Diophantine approximations and regular coloring of distance graphs*.
Xuding Zhu, National Sun Yat-sen University (942-05-131)

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

Special Session on Geometric Group Theory

8:00 AM - 10:50 AM Room 212, Classroom Building Complex C

Organizers: **Eric M. Freden**, Southern Utah University
Eric Lewis Swenson, Brigham Young University

- 8:00AM (7) *On Higman type embeddings of groups*. Preliminary report.
Mark V. Sapir, Vanderbilt University (942-20-241)
- 8:30AM (8) *The Uniform Membership Problem for the Modular Group is Solvable in Polynomial Time*.
Paul E. Schupp*, University of Illinois, and **Yuri Gurevich**, Microsoft Corporation (942-20-229)
- 9:00AM (9) *Orbits under the action of $Aut(F_n)$* . Preliminary report.
Vladimir Shpilrain* and **Alexei G. Myasnikov**, The City College of New York (942-20-22)
- 9:30AM (10) *Rational homology of automorphism groups of free groups*. Preliminary report.
Karen L. Vogtmann, Cornell University (942-20-216)
- 10:00AM (11) *Intersection number operators and Chebyshev polynomials*.
Stephen P. Humphries, Brigham Young University (942-57-191)
- 10:30AM (12) *Homotopy Theory in low-dimensional spaces*.
Gregory R. Conner*, **James W. Cannon** and **Jack W. Lamoreaux**, Brigham Young University (942-55-54)

Special Session on Invariants, Distributions, Differential Operators and Harmonic Analysis

8:00 AM - 10:50 AM Room 217, Classroom Building Complex C

Organizer: **Ronald L. Lipsman**, University of Maryland, College Park

- 8:00AM (13) *Rationality of Generalized Binomial Coefficients*.
Chal Benson* and **Gail Ratcliff**, University of Missouri - St. Louis (942-22-110)

found in Volume 20, 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.

- 8:30AM (14) *Orbital convolutions and character formulae*.
Anthony H. Dooley, University of New South Wales (942-22-09)
- 9:00AM (15) *Gelfand Pairs for Nilpotent Lie Groups*. Preliminary report.
Joe W. Jenkins, National Science Foundation (942-22-180)
- 9:30AM (16) *An Invariant Symmetric Non-Selfadjoint Differential Operator*. Preliminary report.
Erik G. F. Thomas, University of Groningen, The Netherlands (942-22-33)
- 10:00AM (17) *The Gelfand Space for free two-step nilpotent groups*. Preliminary report.
Gail Ratcliff* and **Chal Benson**, University of Missouri - St. Louis (942-22-243)
- 10:30AM (18) *Projective limit representations of direct limit Lie groups*. Preliminary report.
R. Michael Howe, University of Wisconsin-Eau Claire (942-22-45)

Special Session on Control and Dynamics of Partial Differential Equations

- 9:00 AM – 10:50 AM **Room 221, Classroom Building Complex C**
- Organizer: **Zhonghai Ding**, University of Nevada-Las Vegas
- 9:00AM (19) *Uniform stability of full von Karman models describing nonlinear elasticity with thermoelastic effects*.
Irena Lasiecka, University of Virginia (942-93-26)
- 9:30AM (20) *An example of a globally controllable semilinear heat equation with superlinear term*.
Alexander Y. Khapalov, Washington State University (942-93-32)
- 10:00AM (21) *Chaotic Vibration of the Wave Equation by Nonlinear Feedback Boundary Control*.
Goong Chen, Texas A&M University (942-93-37)
- 10:30AM (22) *Measure Solutions for Semilinear and Quasilinear Evolution Equations and Their Optimal Control*.
Nasir U. Ahmed, University of Ottawa (942-93-49)

Special Session on Nonlinear PDEs - Methods and Applications

- 9:00 AM – 10:50 AM **Room 222, Classroom Building Complex C**
- Organizer: **David Costa**, University of Nevada-Las Vegas
- 9:00AM (23) *On Quasi-linear PDEs Involving the Critical Sobolev and Hardy Exponents*.
Nassif Ghoussoub* and **C. Yuan**, University of British Columbia (942-35-86)
- 9:40AM (24) *Sign-changing solutions to singular second-order boundary value problems*.
P. J. McKenna*, University of Connecticut, and **W. Reichel**, Universität Basel (942-35-190)
- 10:20AM (25) *On quasilinear elliptic problems*.
Klaus Schmitt*, Univ. of Utah, and **Vy K. Le**, Univ. Missouri-Rolla (942-35-215)

Special Session on Set Theory

- 9:00 AM – 10:50 AM **Room 210, Classroom Building Complex C**
- Organizers: **Douglas Burke**, University Nevada-Las Vegas
Derrick DuBose, University Nevada-Las Vegas

- 9:00AM (26) *A property of Reznichenko and additivity of the meager ideal*. Preliminary report.
Marion Scheepers*, Boise State University, and **Ljubisha Kocinac**, University of Nis (942-04-130)
- 9:30AM (27) *Ramsey Games and Sequoias*.
Carl Darby, UNLV (942-04-227)
- 10:00AM (28) *The Yellow Cake*.
Andrzej Roslanowski*, Boise State University, and **Saharon Shelah**, Hebrew University (942-03-173)
- 10:30AM (29) *Cardinal invariants and ideals*.
Tomek Bartoszynski, Boise State University (942-04-231)

Special Session on Number Theory

- 9:00 AM – 10:50 AM **Room 215, Classroom Building Complex C**
- Organizers: **Gennady Bachman**, University of Nevada, Las Vegas
Richard A. Mollin, University of Calgary
Peter J. Shiue, University of Nevada, Las Vegas
- 9:00AM (30) *Winners and Losers in the Shanks-Renyi Race Game*. Preliminary report.
Andrey Feuerverger and **Greg Martin***, University of Toronto (942-11-223)
- 9:30AM (31) *Evaluation of central binomial series*.
Jonathan M. Borwein*, Simon Fraser University, and **David Broadhurst**, Open University, UK (942-11-80)
- 10:00AM (32) *Continuous analogues of the counting function of γ -smooth numbers*. Preliminary report.
Harold G. Diamond*, University of Illinois at Urbana-Champaign, and **Ferrell S. Wheeler**, Center for Computational Sciences (942-11-156)
- 10:30AM (33) *On a problem of Turan*. Preliminary report.
Michael A. Filaseta, University of South Carolina (942-12-200)

Special Session on Combinatorial Theory

- 9:00 AM – 10:50 AM **Room 214, Classroom Building Complex C**
- Organizers: **Kequan Ding**, University of Illinois, Urbana
Peter Shiue, University of Nevada, Las Vegas
Yeong-Nan Yeh, Academia Sinica
- 9:00AM (34) *f -vectors of Cutsets in the Truncated Boolean Lattice*.
Shahriar Shahriari, Pomona College (942-05-228)
- 9:30AM (35) *A Uniform Approach to Problems on Intersecting Families of a Finite Set*. Preliminary report.
Hunter S. Snevily, University of Idaho (942-05-128)
- 10:00AM (36) *Asymptotic and Sharp Bounds for Graphical Ramsey Numbers*.
Cecil C. Rousseau, The University of Memphis (942-05-182)
- 10:30AM (37) *Monochromatic arithmetic forests*. Preliminary report.
Tom C. Brown, Simon Fraser University (942-05-55)

Special Session on Analysis and Geometry

- 9:00 AM – 11:05 AM **Room 218, Classroom Building Complex C**
- Organizers: **Peter Li**, University of California, Irvine
Song-Ying Li, University of California, Irvine

- 9:00AM (38) *Invariant metric estimates for the Cauchy-Riemann equations on some pseudoconvex domains.*
Jeffery D. McNeal, Ohio State University (942-32-219)
- 9:25AM (39) *Recent progress on the Kakeya conjecture.*
Terence C. Tao*, UCLA, **Nets H. Katz**, University of Illinois at Chicago, and **Izabella Laba**, Princeton University (942-42-53)
- 9:55AM (40) *Concerning the solution of the Levi problem by d -bar methods.* Preliminary report.
Emil J. Straube, Texas A&M University (942-32-169)
- 10:20AM (41) *Base change in moment problems.* Preliminary report.
Florian-Horian Vasilescu, Universite de Lille, and **Mihai Putinar***, University of California (942-41-38)
- 10:45AM (42) *Uniquely factorizable of certain classes of functions.* Preliminary report.
Chung-chun Yang, Hong Kong Univ. of Science & Technology (942-30-139)

Special Session on Diophantine Problems

- 9:00 AM – 10:50 AM **Room 216, Classroom Building Complex C**
- Organizers: **Arthur Baragar**, University of Nevada, Las Vegas
Michael Bennett, University of Illinois
- 9:00AM (43) *Old and new results on Diophantine equations of the form $aX^4 - bY^2 = \pm 1$.*
Michael A. Bennett, University of Illinois, Urbana, and **Gary Walsh***, University of Ottawa (942-11-05)
- 9:30AM (44) *Some recent results on the modularity of two-dimensional p -adic Galois representations.*
Chris Skinner, IAS (942-11-210)
- 10:00AM (45) *The regularity theorem and conductor-discriminant inequalities.*
Minhyong Kim, University of Arizona (942-11-203)
- 10:30AM (46) *Arithmetic of Fermat curves.*
Pavlos Tzermias, University of Arizona (942-11-194)

Special Session on Symmetries of Knots and Three-manifolds

- 9:00 AM – 10:50 AM **Room 219, Classroom Building Complex C**
- Organizers: **Swatee Naik**, University of Nevada, Reno
Jozef H. Przytycki, George Washington University
- 9:00AM (47) *Intrinsically Asymmetric 2-colorings of Graphs in S^3 .* Preliminary report.
Erica Flapan* and **David L. Li**, Pomona College (942-57-150)
- 9:30AM (48) *Symmetries of 2-strand string links up to concordance.*
Theodore B. Stanford, United States Naval Academy (942-57-184)
- 10:00AM (49) *Alexander polynomials of equivariant slice knots.*
James F. Davis*, Indiana University, and **Swatee Naik**, University of Nevada, Reno (942-57-27)
- 10:30AM (50) *Quantum Invariants of periodic three-manifolds.*
Patrick M. Gilmer, Louisiana State University (942-00-104)

Special Session on Numerical Analysis and Computational Mathematics

- 9:30 AM – 10:50 AM **Room 223, Classroom Building Complex C**
- Organizers: **Jun Zhang**, University of Kentucky
Jennifer Zhao, University of Michigan, Dearborn
- 9:30AM (51) *Finite Element Domain Decomposition Methods for a Fluid-Solid Interaction Problem in the Frequency Domain.*
Xiaobing Feng, The University of Tennessee (942-65-183)
- 10:00AM (52) *Multiscale simulation of a granular medium using multi-grid methods.*
Richard B. Clelland, University of Colorado, Boulder (942-65-77)
- 10:30AM (53) *A Finite Difference Scheme for Solving Heat Transport Equation in Microscale.*
Weizhong Dai, Louisiana Tech University (942-65-253)

Invited Address

- 11:10 AM – NOON **Auditorium A-108, Classroom Building Complex A**
- (54) *Large cardinals, determinacy, and inner models.*
John Steel, University of California, Berkeley (942-04-254)

Invited Address

- 1:30 PM – 2:20 PM **Auditorium A-108, Classroom Building Complex A**
- (55) *Representation theory and four-dimensional conformal field theory.*
Igor Frenkel, Yale University (942-17-251)

Special Session on Control and Dynamics of Partial Differential Equations

- 3:00 PM – 5:20 PM **Room 221, Classroom Building Complex C**
- Organizer: **Zhonghai Ding**, University of Nevada-Las Vegas
- 3:00PM (56) *Formation of a Nonlinear Elastic Plate.*
David Russell, Virginia Tech (942-93-192)
- 3:30PM (57) *Global Uniqueness Theorems for Boundary Control.*
Walter Littman, University of Minnesota (942-93-146)
- 4:00PM (58) *Continuous observability inequalities for hyperbolic and Schrodinger equations with variable coefficients.*
Roberto Triggiani, University of Virginia (942-93-181)
- 4:30PM (59) *Convergence and Morse Index Results on a Minimax Method for Finding Critical Points.*
Jianxin Zhou* and **Yongxin Li**, Texas A&M University (942-41-71)
- 5:00PM (60) *Ergodic Control of Turbulence.*
Sivaguru S. Sritharan*, US Navy, and **P. Sundar**, Louisiana State University (942-93-233)

Special Session on Graph Theory

- 3:00 PM – 5:50 PM **Room 213, Classroom Building Complex C**
- Organizers: **Hung-Lin Fu**, National Chiao-Tung University-Taiwan

Chris A. Rodger, Auburn University
Michelle Schultz, University of Nevada,
 Las Vegas

- 3:00PM (61) *Symbolic dynamics and the spectra of nonnegative integer matrices.*
Nicholas S. Ormes*, University of Texas, Austin, **Ki H. Kim** and **Fred W. Roush**, Alabama State University (942-05-73)
- 3:30PM (62) *Graph Connectivity After Path Removal.*
Guantao Chen, Georgia State University, **Ronald J. Gould***, Emory University, and **Xingxing Yu**, Georgia Tech (942-05-59)
- 4:00PM (63) *Graphs of diameter two and collapsible graphs.*
 Preliminary report.
Zhi-Hong Chen, Butler University (942-05-51)
- 4:30PM (64) *Surfaces and connectivities.*
Michael Plummer, Vanderbilt University, and **Xiaoya Zha***, Middle Tennessee State University (942-05-149)
- 5:00PM (65) *Recent developments in the theory of Cayley maps.*
Robert Jajcay, Indiana State University (942-05-153)
- 5:30PM (66) *Chess and the Order of Polyominoes.* Preliminary report.
C. S. Felicitas, and **Joseph Gould***, C.F.C.T.E., Inc. (942-90-36)

Special Session on Nonlinear PDEs - Methods and Applications

3:00 PM – 5:30 PM Room 222, Classroom Building Complex C

Organizer: **David Costa**, University of Nevada-Las Vegas

- 3:00PM (67) *Computation and visualization of multiple solutions of semilinear elliptic boundary value problems.*
Goong Chen, Texas A&M Univ. (942-35-83)
- 3:40PM (68) *Boundary value problems with concave nonlinearities near the origin.*
Zhi-Qiang Wang, Utah State University (942-35-101)
- 4:20PM (69) *Liouville Properties and a conjecture of de Giorgi.*
Changfeng Gui, University of British Columbia, Vancouver, BC, Canada (942-35-224)
- 5:00PM (70) *Existence and Multiplicity Results for Indefinite Semilinear Elliptic Equations in the Whole Space.*
Hossein T. Tehrani* and **David G. Costa**, University of Nevada, Las Vegas (942-35-193)

Special Session on Set Theory

3:00 PM – 5:50 PM Room 210, Classroom Building Complex C

Organizers: **Douglas Burke**, University Nevada-Las Vegas
Derrick DuBose, University Nevada-Las Vegas

- 3:00PM (71) *On the classification problem for rank 2 torsion-free abelian groups.*
Alexander S. Kechris, Caltech (942-04-171)
- 3:30PM (72) *Much ado about counterexamples to Vaught's Conjecture.*
Howard Becker, Univ. of South Carolina (942-04-127)
- 4:00PM (73) *Borel completeness of Boolean algebras and some related equivalence relations.*
Riccardo Camerlo* and **Su Gao**, Caltech (942-04-168)
- 4:30PM (74) *A counterexample to the strong Martin conjecture.*
Su Gao, California Institute of Technology (942-03-151)

- 5:00PM (75) *Borel functions, continuity, and recursion theorem.*
Slawomir Solecki, Indiana University (942-03-157)
- 5:30PM (76) *Prewellorders and inner model theory.*
Greg Hjorth, University of California, Los Angeles (942-04-162)

Special Session on Numerical Analysis and Computational Mathematics

3:00 PM – 5:50 PM Room 223, Classroom Building Complex C

Organizers: **Jun Zhang**, University of Kentucky
Jennifer Zhao, University of Michigan, Dearborn

- 3:00PM (77) *A Multilevel Preconditioning Technique with Implicit Coarse Level System Construction.*
Jun Zhang, University of Kentucky (942-65-40)
- 3:30PM (78) *Interface Preserving Coarsening Multigrid for Discontinuous Coefficient Problems.* Preliminary report.
Wing Lok Wan, Stanford University (942-65-164)
- 4:00PM (79) *Numerical Solution of Stiff ODEs with Applications to Neural Networks.*
Alan Q. Li and **Edwaed Blum***, University of Southern California (942-34-111)
- 4:30PM (80) *A New Formulation for the Valuation of American Options.*
Junping Wang, University of Wyoming (942-65-178)
- 5:00PM (81) *Transpose-free Matrix Padé Via Lanczos Method.*
Manchung Yeung, University of California, Los Angeles (942-65-43)
- 5:30PM (82) *A nonlinear parabolic equation modeling surfactant diffusion.*
Xinfu Chen, University of Pittsburgh, **Chaocheng Huang**, Wright State University, and **Jennifer Zhao***, University of Michigan-Dearborn (942-65-10)

Special Session on Number Theory

3:00 PM – 5:20 PM Room 215, Classroom Building Complex C

Organizers: **Gennady Bachman**, University of Nevada, Las Vegas
Richard A. Mollin, University of Calgary
Peter J. Shiue, University of Nevada, Las Vegas

- 3:00PM (83) *Number Fields with Prescribed Ramification.*
John W. Jones*, Arizona State University, and **David P. Roberts**, Rutgers University (942-11-12)
- 3:30PM (84) *An algorithm for computing fundamental units of bicubic fields.* Preliminary report.
Charles J. Parry, Virginia Polytechnic Institute and State University (942-11-89)
- 4:00PM (85) *The Size of the Fundamental Solutions of Consecutive Pell Equations.*
Hugh C. Williams*, University of Manitoba, and **Michael J. Jacobson Jr.**, University of Waterloo (942-11-126)
- 4:30PM (86) *A structure theorem for units and its application.* Preliminary report.
Mary E. Flahive, Oregon State University (942-11-235)
- 5:00PM (87) *Complete classification of quadratic polynomials producing primes for an initial range of input values.*
Bart E. Goddard*, Texas A&M University, and **Richard A. Mollin**, University of Calgary (942-11-209)

Special Session on Combinatorial Theory

3:00 PM – 5:50 PM Room 214, Classroom Building Complex C

Organizers: **Kequan Ding**, University of Illinois, Urbana
Peter Shiue, University of Nevada, Las Vegas
Yeong-Nan Yeh, Academia Sinica

- 3:00PM *Cyclic Relative Difference Sets with Classical Parameters.* (88)
K. T. Arasu*, Wright State University, **John F. Dillon**, National Security Agency, **K. H. Leung** and **S. L. Ma**, National University of Singapore (942-05-188)
- 3:30PM *A recursive method for orthogonal designs.* (89)
Hadi Kharaghani, University of Lethbridge (942-05-158)
- 4:00PM *q-Statistics and perfect matchings with forbidden edges.* Preliminary report. (90)
James Haglund*, Penn State University, and **Jeffrey B. Remmel**, Univ. of Cal., San Diego (942-05-154)
- 4:30PM *Some remarks on extending $AG(4, 2)$.* Preliminary report. (91)
Joseph L. Yucas, Southern Illinois University, Carbondale, IL 62901 (942-05-65)
- 5:00PM *Iterative roots of constant polynomials over finite fields, preliminary report.* Preliminary report. (92)
Wun-Seng Chou, Institute of Mathematics Academia Sinica (942-05-135)
- 5:30PM *An estimation of the number of irreducible polynomials of given degree over a finite field.* (93)
Yaotsu Chang, I-Shou University (942-12-175)

Special Session on Analysis and Geometry

3:00 PM – 5:30 PM Room 218, Classroom Building Complex C

Organizers: **Peter Li**, University of California, Irvine
Song-Ying Li, University of California, Irvine

- 3:00PM *Bundles rigidity on complex surfaces of general type.* Preliminary report. (94)
Bun Wong, UC Riverside (942-32-163)
- 3:25PM *WDVV Equations on Kaehler Manifolds.* (95)
Huai-Dong Cao* and **Jian Zhou**, Texas A&M University (942-53-202)
- 3:50PM *Special Lagrangian fibration and stable bundles.* Preliminary report. (96)
Jingyi Chen*, UBC, and **Gang Tian**, MIT (942-53-159)
- 4:20PM *Constant mean curvature surfaces in hyperbolic space with prescribed asymptotic behaviour at infinity.* Preliminary report. (97)
Giovanni Gregori*, Universitaet Bonn, and **Rafe Mazzeo**, Stanford University (942-49-136)
- 4:45PM *Homogenous Bäcklund transformations of hyperbolic Monge-Ampère systems.* Preliminary report. (98)
Jeanne Nielsen Clelland, University of Colorado (942-58-15)
- 5:10PM *A superrigidity type theorem for complex hyperbolic manifolds.* (99)
Mu-Tao Wang, Stanford University (942-53-84)

Special Session on Diophantine Problems

3:00 PM – 5:20 PM Room 216, Classroom Building Complex C

Organizers: **Arthur Baragar**, University of Nevada, Las Vegas
Michael Bennett, University of Illinois

- 3:00PM *On the discriminant of classical polynomials.* Preliminary report. (100)
Fernando Rodriguez-Villegas, University of Texas at Austin (942-11-214)
- 3:30PM *Automorphisms of cubic moduli spaces.* (101)
William M. Goldman, University of Maryland (942-14-129)
- 4:00PM *Torsion Points on $X_0(N)$.* (102)
Matthew H. Baker, UC Berkeley (942-14-34)
- 4:30PM *Constraints on value sets over finite fields.* Preliminary report. (103)
Wayne Aitken, California State University (942-11-225)
- 5:00PM *Algebraic families of nonzero elements of Shafarevich-Tate groups.* (104)
Jean-Louis Colliot-Thélène, Université de Paris-Sud, and **Bjorn Poonen***, University of California at Berkeley (942-11-46)

Special Session on Invariants, Distributions, Differential Operators and Harmonic Analysis

3:00 PM – 5:50 PM Room 217, Classroom Building Complex C

Organizer: **Ronald L. Lipsman**, University of Maryland, College Park

- 3:00PM *Orbit geometry and noncommutativity of invariant differential operators on nilpotent homogeneous spaces.* (105)
Frederick P. Greenleaf, New York University/Courant Inst. (942-43-81)
- 3:30PM *The Hua system on non-tube type Hermitian symmetric spaces.* Preliminary report. (106)
Richard C. Penney, Purdue University (942-22-197)
- 4:00PM *Analysis of monomial representations.* Preliminary report. (107)
Hidenori Fujiwara, Kinki University in Kyushu (942-22-107)
- 4:30PM *Non-commutativity of Certain Subquotients in the Enveloping Algebra of a Nilpotent Lie Algebra.* Preliminary report. (108)
Bradley N. Currey, Saint Louis University (942-22-142)
- 5:00PM *Holomorphically induced representations of some solvable Lie groups.* (109)
Junko Inoue, Tottori University (942-22-166)
- 5:30PM *Generalized Moment Sets and Unitary Representations of Exponential Solvable Lie Groups.* (110)
Ali Baklouti, Sfax, Tunisia (942-22-252)

Special Session on Symmetries of Knots and Three-manifolds

3:00 PM – 5:50 PM Room 219, Classroom Building Complex C

Organizers: **Swatee Naik**, University of Nevada, Reno
Jozef H. Przytycki, George Washington University

- 3:00PM *Periodicity of homology spheres.*
(111) **Joanna Kania-Bartoszyńska***, Boise State University, and **Jozef H. Przytycki**, George Washington University (942-57-198)
- 3:30PM *Periodic knots and the twisted Alexander polynomials.* Preliminary report.
(112) **Swatee Naik**, University of Nevada-Reno, and Tata Institute of Fundamental Research, Mumbai. (942-57-205)
- 4:00PM *Murakami-Ohtsuki-Okada invariants and periodicity of 3-manifolds.*
(113) **Maxim V. Sokolov**, George Washington University (942-57-199)
- 4:30PM *Homotopy skein module, dichromatic polynomial and symmetry.*
(114) **Jozef H. Przytycki**, GWU (942-57-237)
- 5:00PM *The Casson-Walker-Lescop invariant and link invariants.*
(115) **Jeff Johannes**, University of Nevada, Las Vegas (942-57-13)
- 5:30PM *Concordance of Classical Knots.* Preliminary report.
(116) **Andrius Tamulis**, Monmouth College (942-57-20)

Session on Contributed Papers

3:30 PM – 5:25 PM **Room 225, Classroom Building Complex C**

- 3:00PM *Results on the Blow-up of a Heat Source Traveling with Varying Speed and Direction in a Diffusive Medium.* Preliminary report.
(117) **Colleen M. Kirk***, graduate student, and **W. E. Olmstead**, Professor (942-45-170)
- 3:15PM *Stability of Impulsive Delay Differential Equations.* Preliminary report.
(118) **Xinzhi Liu**, University of Waterloo (942-34-78)
- 3:30PM *Theorems on n-dimensional Laplace Transforms and their applications.* Preliminary report.
(119) **R. S. Dahiya**, Iowa State University (942-44-244)
- 3:45PM *Approximation methods for integrodifferential equations.*
(120) **James H. Liu**, James Madison University (942-34-44)
- 4:00PM *A Noncommutative Generalization of Gelfand Duality for C^* -algebras.*
(121) **Mukul S. Patel**, San Leandro, California (942-46-120)
- 4:30PM *Interpolation wavelets and their application in solving nonlinear anisotropic diffusion equations.*
(122) **Jianzhong Wang**, Sam Houston State University (942-35-16)
- 4:45PM *WKB Analysis of the General Fourth Painleve Equation.*
(123) **Alisher S. Abdullayev**, National University (942-34-28)
- 5:00PM *Fuzzy contractions and fixed points.* Preliminary report.
(124) **Mark Burgin**, University of California (942-26-29)
- 5:15PM *Data, Data Spaces, Restrictions, and Generalities.* Preliminary report.
(125) **C. S. Felicitas**, C.F.C.T.E., Inc. (942-92-122)

Council

7:00 PM – 11:00 PM **Patio Cafe, La Quinta Inn**

Sunday, April 11

Meeting Registration

8:00 AM – NOON **Lobby, 2nd Floor, Classroom Building Complex C**

Special Session on Graph Theory

8:00 AM – 10:50 AM **Room 213, Classroom Building Complex C**

Organizers: **Hung-Lin Fu**, National Chiao-Tung University-Taiwan
Chris A. Rodger, Auburn University
Michelle Schultz, University of Nevada, Las Vegas

- 8:00AM *The structure of neighbor disconnected vertex transitive graphs.*
(126) **Richard J. Goldstone**, Manhattan College (942-05-17)
- 8:30AM *Asymptotic Growth in Nonsymmetric Graphs.* Preliminary report.
(127) **Tomaz Pisanski**, University of Ljubljana, and **Thomas W. Tucker***, Colgate University (942-05-87)
- 9:00AM *Near-automorphisms of complete multipartite graphs.* Preliminary report.
(128) **K. B. Reid**, California State University San Marcos (942-05-105)
- 9:30AM *Configurations and their Levi graphs.* Preliminary report.
(129) **Tomaz Pisanski**, University of Ljubljana (942-05-138)
- 10:00AM *Cycle Decompositions of K_n and $K_n - I$.*
(130) **Heather D. Gavlas***, Grand Valley State University, and **Brian Alspach**, Simon Fraser University (942-05-108)
- 10:30AM *Decomposing complete graphs into cycles of fixed length.* Preliminary report.
(131) **Brian R. Alspach*** and **Mateja Sajna**, Simon Fraser University (942-05-74)

Special Session on Invariants, Distributions, Differential Operators and Harmonic Analysis

8:00 AM – 10:50 AM **Room 217, Classroom Building Complex C**

- Organizer: **Ronald L. Lipsman**, University of Maryland, College Park
- 8:00AM *Root systems and special functions.*
(132) **Siddhartha Sahi**, Rutgers University (942-22-31)
- 8:30AM *The Paley-Wiener theorem for a reductive symmetric space.*
(133) **Erik P. van den Ban***, Universiteit Utrecht, The Netherlands, and **Henrik Schlichtkrull**, Københavns Universitet, Denmark (942-22-212)
- 9:00AM *Schwartz space for the hypergeometric Fourier transform.*
(134) **Patrick A. Delorme**, Institut de Mathématiques de Luminy (942-22-62)
- 9:30AM *Faithful representations and extension of Weyl's construction.*
(135) **Jing-Song Huang**, HKUST (942-22-132)
- 10:00AM *Generalized Huygens' Principle.*
(136) **Chen-bo Zhu**, National University of Singapore (942-22-14)
- 10:30AM *Explicit realizations of singular representations.*
(137) **Alexander Dvorsky*** and **Siddhartha Sahi**, Rutgers University (942-22-91)

AMS Exhibit and Book Sale

8:00 AM – NOON Lobby, 2nd Floor, Classroom Building Complex C

Special Session on Geometric Group Theory

8:30 AM – 10:50 AM Room 212, Classroom Building Complex C

Organizers: **Eric M. Freeden**, Southern Utah University
Eric Lewis Swenson, Brigham Young University

- 8:30AM (138) *Suppose a group G splits as a product and that groups acting on products of $CAT(0)$ spaces.*
Kim E. Ruane, Vanderbilt University (942-20-236)
- 9:00AM (139) *Visual Decompositions of Coxeter Groups.* Preliminary report.
Michael L. Mihalik* and **Steven T. Tschantz**, Vanderbilt University (942-20-195)
- 9:30AM (140) *Test elements in hyperbolic groups.* Preliminary report.
Edward C. Turner, SUNY at Albany (942-20-57)
- 10:00AM (141) *On the Davis hyperbolic 4-manifold.*
John G. Ratcliffe* and **Steven T. Tschantz**, Vanderbilt University (942-57-79)
- 10:30AM (142) *Locally free Kleinian groups.* Preliminary report.
James W. Anderson, University of Southampton and Rice University (942-57-48)

Special Session on Control and Dynamics of Partial Differential Equations

9:00 AM – 10:50 AM Room 221, Classroom Building Complex C

Organizer: **Zhonghai Ding**, University of Nevada-Las Vegas

- 9:00AM (143) *Reduced Basis Methods for Computation of Open Loop and Feedback Controls in Partial Differential Equation Problems .*
H. T. Banks, North Carolina State University (942-35-196)
- 9:30AM (144) *Optimal Control Approaches to Engineering Design: Numerical and Mathematical Issues .*
John A. Burns, Virginia Tech (942-93-239)
- 10:00AM (145) *Controllability of Elastic Systems with Fluid Coupling.*
Scott Hansen, Iowa State University (942-93-211)
- 10:30AM (146) *Transient Heat Transfer Behavior of One-Dimensional Symmetric Thermoelectric SMA Actuators.*
Zhonghai Ding, University of Nevada-Las Vegas (942-93-179)

Special Session on Nonlinear PDEs - Methods and Applications

9:00 AM – 10:50 AM Room 222, Classroom Building Complex C

Organizer: **David Costa**, University of Nevada-Las Vegas

- 9:00AM (147) *Morse index, Newton's method, and bifurcation of nonlinear elliptic PDE.* Preliminary report.
John M. Neuberger, NAU (942-35-88)
- 9:40AM (148) *Exact multiplicity of solutions of semilinear problem with jumping nonlinearities.*
Junping Shi, Tulane University (942-35-85)

- 10:20AM (149) *Parameter-Ellipticity and Parabolicity for Mixed-order Systems and Applications.* Preliminary report.
Alexander Kozhevnikov, University of Haifa (942-35-93)

Special Session on Set Theory

9:00 AM – 11:00 AM Room 210, Classroom Building Complex C

Organizers: **Douglas Burke**, University of Nevada-Las Vegas
Derrick DuBose, University of Nevada-Las Vegas

- 9:00AM (150) *A survey of low-level $L(R)$ combinatorics.*
Steve C. Jackson, University of North Texas (942-04-185)
- 9:25AM (151) *Covering Lemmas for $L(\mathbb{R})$ and $K(\mathbb{R})$.* Preliminary report.
Daniel W. Cunningham, Buffalo State College (942-04-103)
- 9:50AM (152) *Some Connections Between Descriptive Set Theory and Inner Model Theory.* Preliminary report.
Mitch Rudominer, Florida International University (942-04-176)
- 10:15AM (153) *The Consistency Strength of Blackwell Determinacy.*
Benedikt Löwe, Humboldt-Universität zu Berlin (942-03-177)
- 10:40AM (154) *Jonsson Cardinals and their successors.*
Philip D. Welch, Kobe University, University of Bristol. (942-03-248)

Special Session on Number Theory

9:00 AM – 10:50 AM Room 215, Classroom Building Complex C

Organizers: **Gennady Bachman**, University of Nevada, Las Vegas
Richard A. Mollin, University of Calgary
Peter J. Shiue, University of Nevada, Las Vegas

- 9:00AM (155) *Haar wavelets and irregularities of distribution.* Preliminary report.
Andrew D. Pollington, BYU (942-11-218)
- 9:30AM (156) *Binary Egyptian Fractions.*
E. Croot, University of Georgia, **D. Dobbs**, University of Tennessee, **J. B. Friedlander***, University of Toronto, **A. Hetzel**, University of Tennessee, and **F. Pappalardi**, Universita Roma Tre (942-11-58)
- 10:00AM (157) *Explicit Merit Factor Formulae For Fekete and Turyn Polynomials.*
Peter Borwein*, Simon Fraser University, and **Kwok-Kwong Stephen Choi**, University of Hong Kong (942-11-61)
- 10:30AM (158) *Rational triangles with rational Morley triangles.*
Andrew Bremner*, Arizona State University, **Joseph R. Goggins**, British Rail, **Michael J. T. Guy**, Cambridge University, and **Richard K. Guy**, University of Calgary (942-11-52)

Special Session on Combinatorial Theory

9:00 AM – 10:50 AM Room 214, Classroom Building Complex C

Organizers: **Kequan Ding**, University of Illinois, Urbana
Peter Shiue, University of Nevada, Las Vegas

Yeong-Nan Yeh, Academia Sinica

- 9:00AM *Rental Harmony: Sperner's Lemma in Fair Division.*
 ▶ (159) **Francis Edward Su**, Harvey Mudd College (942-05-25)
- 9:30AM *On the Number of Successive Left-to-right Maxima in Random Permutations.* Preliminary report.
 (160) **Yeong-Nan Yeh**, Institute of Mathematics, Academia Sinica, Taiwan, R.O.C. (942-05-123)
- 10:00AM *Left-modular Elements.* Preliminary report.
 (161) **Larry S. C. Liu**, Michigan State University (942-06-124)
- 10:30AM *Congruences for generalized Stirling numbers.*
 ▶ (162) **Sophie Frisch***, Technische Universität Graz, and **Brian Ward**, University of Chicago (942-05-23)

- 9:00AM *Dehn surgeries on knots which yield lens spaces and genera of knots .*
 (171) **Hiroshi Goda***, University of California at Davis, and **Masakazu Teragaito**, Hiroshima University (942-57-106)
- 9:30AM *Homology of cyclic covers of slice knots.* Preliminary report.
 (172) **Karl A. Bloch*** and **Davis F. James**, Indiana University (942-57-21)
- 10:00AM *Periodic Links and Representation Shifts.*
 (173) **Daniel S. Silver*** and **Susan G. Williams**, Univ. of South Alabama (942-57-189)
- 10:30AM *Classification of links up to surgery equivalence of second class.* Preliminary report.
 (174) **Fan Ding**, Peking University, and **Xiao-Song Lin***, UC Riverside (942-57-102)

Special Session on Analysis and Geometry

9:00 AM – 10:40 AM Room 218, Classroom Building Complex C

Organizers: **Peter Li**, University of California, Irvine
Song-Ying Li, University of California, Irvine

- 9:00AM *Mappings between balls.*
 ▶ (163) **Xiaojun Huang**, Rutgers University (942-32-145)
- 9:25AM *On singular diffusion equations.*
 (164) **Panagiota Daskalopoulos**, University of California, Irvine (942-35-242)
- 9:55AM *Bohr's power series theorem in the unit ball of $\ell_p(\mathbb{C}^n)$.* Preliminary report.
 (165) **Harold P. Boas**, Texas A&M University (942-32-109)
- 10:20AM *The dimension of an automorphism group.*
 (166) **James A. Gifford**, **Alexander V. Isaev**, The Australian National University, and **Steven G. Krantz***, Washington University in St. Louis (942-32-246)

Special Session on Diophantine Problems

9:00 AM – 10:50 AM Room 216, Classroom Building Complex C

Organizers: **Arthur Baragar**, University of Nevada, Las Vegas
Michael Bennett, University of Illinois

- 9:00AM *Jacobians of Curves of Genus 1.*
 ▶ (167) **William G. McCallum**, University of Arizona (942-11-201)
- 9:30AM *A 2-dimensional continued fraction algorithm associated with interval exchanges and a theorem of Lagrange.*
 (168) **Sebastien Ferenczi**, Universite de Tours, **Charles Holton**, University of California, and **Luca Q. Zamboni***, University of North Texas (942-11-76)
- 10:00AM *Geometrically simple reduction types of CM abelian varieties.* Preliminary report.
 (169) **Hui Zhu**, MSRI (942-11-217)
- 10:30AM *Geometric Non-vanishing.* Preliminary report.
 (170) **Douglas Ulmer**, University of Arizona (942-11-245)

Special Session on Symmetries of Knots and Three-manifolds

9:00 AM – 10:50 AM Room 219, Classroom Building Complex C

Organizers: **Swatee Naik**, University of Nevada, Reno
Jozef H. Przytycki, George Washington University**Special Session on Numerical Analysis and Computational Mathematics**

9:30 AM – 10:50 AM Room 223, Classroom Building Complex C

Organizers: **Jun Zhang**, University of Kentucky
Jennifer Zhao, University of Michigan, Dearborn

- 9:30AM *Piecewise Linear Markov Approximations of Markov Operators on $L^1([0, 1]^N)$.*
 (175) **Jiu Ding***, University of Southern Mississippi, and **Aihui Zhou**, Academia Sinica (942-65-111)
- 10:00AM *Collocation Methods and Optimal Stopping Problems; an Application to the Pricing of Vanilla Options on One Risky Asset.*
 (176) **Michael D. Marcozzi**, University of Nevada, Las Vegas (942-65-167)
- 10:30AM *Mixed Elements for Linear Stokes Equations and Multigrid Solvers .*
 (177) **Shangyou Zhang**, University of Delaware (942-65-222)

Invited Address

11:10 AM – NOON Auditorium A-108, Classroom Building Complex A

- ▶ (178) *Tilings, quasicrystals and continuous symmetry.*
Lorenzo A. Sadun, University of Texas at Austin (942-52-75)

Invited Address

1:30 PM – 2:10 PM Auditorium A-108, Classroom Building Complex A

- (179) *From Topological Quantum Field Theory to Fault-Tolerant Quantum Computation.*
Greg Kuperberg, UC Davis (942-68-234)

Special Session on Graph Theory

3:00 PM – 4:50 PM Room 213, Classroom Building Complex C

Organizers: **Hung-Lin Fu**, National Chiao-Tung University-Taiwan
Chris A. Rodger, Auburn University
Michelle Schultz, University of Nevada, Las Vegas

- 3:00PM *Chords of longest circuits.*
 (180) **X. C. Li**, and **C.-Q. Zhang***, West Virginia Univ. (942-05-121)

- 3:30PM **►** (181) *Two-Factors with exactly two cycles in Hamiltonian Graphs.*
Michael S. Jacobson*, University of Louisville,
Ralph J. Faudree, University of Memphis, **Ronald J. Gould**, Emory University, **Linda Lesniak**, Drew University, and **Akira Saito**, Nihon University (942-05-42)
- 4:00PM (182) *Maximal Sets of Hamilton Cycles.*
Chris A. Rodger*, Auburn University, **Saad El-Zanati**, Illinois State University, and **Darryn E. Bryant**, University of Queensland (942-05-66)
- 4:30PM (183) *Edge critical bipartite graphs without 4-cycles.*
Darryn E. Bryant, The University of Queensland, and **Hung-Lin Fu***, National Chiao Tung University (942-05-82)

Special Session on Nonlinear PDEs - Methods and Applications

3:00 PM – 5:30 PM **Room 222, Classroom Building Complex C**

Organizer: **David Costa**, University of Nevada-Las Vegas

- 3:00PM (184) *A priori growth estimates for Fuchsian solutions satisfying systems of algebraic PDE.*
Sh. Strelitz, University of Haifa (942-35-240)
- 3:40PM (185) *A periodic boundary value problem for a generalized 2D Ginzburg-Landau equation.*
Charles Bu, Wellesley College (942-35-140)
- 4:20PM (186) *Constant Principal Strain Deformations.*
Martin Chuaqui and **Julian Gevirtz***, P. Universidad Catolica de Chile (942-35-56)
- 5:00PM **►** (187) *Response of a Finite-Depth Saturated Soil to a Single-Pulse Disturbance.*
Brian T. Hayes, Stevens Institute of Technology (942-35-143)

Special Session on Set Theory

3:00 PM – 5:20 PM **Room 210, Classroom Building Complex C**

Organizers: **Douglas Burke**, University Nevada-Las Vegas
Derrick DuBose, University Nevada-Las Vegas

- 3:00PM (188) *Tightness and Internal Approachability.*
Matthew D. Foreman, UC Irvine (942-04-238)
- 3:30PM (189) *Robust and stunted trees of height and cardinality ω_1 .*
Mack Stanley, San Jose State Univ. (942-04-172)
- 4:00PM (190) *Simple complete Boolean algebras.*
Thomas Jech, Penn State University (942-04-133)
- 4:30PM (191) *Gap forcing: generalizing the Levy-Solovay theorem.*
Joel D. Hamkins, City University of New York (942-04-63)
- 5:00PM **►** (192) *Set Theory as a Branch of Mathematics.* Preliminary report.
Noa Goldring, Los Angeles, California (942-04-226)

Special Session on Geometric Group Theory

3:00 PM – 5:50 PM **Room 212, Classroom Building Complex C**

Organizers: **Eric M. Freden**, Southern Utah University
Eric Lewis Swenson, Brigham Young University

- 3:00PM (193) *The splitting obstruction for finitely generated groups.*
Graham A. Niblo, University of Southampton (942-20-47)
- 3:30PM (194) *Grushko's theorem for surface-like complexes.*
John R. Stallings, University of California, Berkeley (942-20-90)
- 4:00PM (195) *The Burau representation is not faithful for $n=5$.* Preliminary report.
Stephen J. Bigelow, University of California at Berkeley (942-20-165)
- 4:30PM (196) *Metrics for generalizations of Thompson's group F.*
José Burillo, Tufts University, **Sean Cleary***, California State University, Fresno, and **Melanie Stein**, Trinity College (942-20-18)
- 5:00PM (197) *Separating quasiconvex subgroups of graph groups.* Preliminary report.
Tim Hsu*, Pomona College, and **Daniel T. Wise**, Cornell University (942-20-134)
- 5:30PM (198) *Tameness and the geodesic cores of subgroups.*
Rita Gitik, A&H Consultants (942-20-144)

Special Session on Analysis and Geometry

3:00 PM – 4:35 PM **Room 218, Classroom Building Complex C**

Organizers: **Peter Li**, University of California, Irvine
Song-Ying Li, University of California, Irvine

- 3:00PM (199) *Geometry of quasicircles and quasiconformal mappings.*
Shanshuang Yang, Emory University (942-30-19)
- 3:25PM (200) *Q_p spaces on Riemann surfaces.*
Rauno Aulaskari, University of Joensuu (942-30-92)
- 3:50PM (201) *An optimal comparison result on heat kernels of conformal Laplacian and applications.*
Qi S. Zhang, University of Memphis (942-35-70)
- 4:15PM (202) *Hodge theory and cohomology with compact supports.*
Ed Bueler*, University of Alaska, Fairbanks, and **Igor Prokhorenkov**, Texas Christian University (942-58-64)

Special Session on Diophantine Problems

3:00 PM – 4:50 PM **Room 216, Classroom Building Complex C**

Organizers: **Arthur Baragar**, University of Nevada, Las Vegas
Michael Bennett, University of Illinois

- 3:00PM (203) *Bounds on exponential sums and applications to cryptography.*
Daniel B. Lieman, University of Missouri (942-11-213)
- 3:30PM (204) *Arithmetic Analogs of Differential Modular Forms.* Preliminary report.
Christine Hurlburt, University of New Mexico (942-14-186)
- 4:00PM (205) *Plane quartics with Jacobians isomorphic to a hyperelliptic Jacobian.*
Everett W. Howe, Center for Communications Research (942-14-155)
- 4:30PM (206) *A slightly weaker conjecture implies the abc conjecture.* Preliminary report.
Paul Vojta, University of California, Berkeley (942-11-230)

**Special Session on Invariants, Distributions,
Differential Operators and Harmonic Analysis**

3:00 PM – 5:50 PM **Room 217, Classroom
Building Complex C**

Organizer: **Ronald L. Lipsman**, University of
Maryland, College Park

3:00PM *Hermite functions and indefinite orthogonal groups.*
(207) **Gerald B. Folland**, University of Washington
(942-33-39)

3:30PM *Fine structure for Bessel functions on complex*
▶ (208) *matrix space.* Preliminary report.
Kenneth I. Gross*, University of Vermont, and
Donald St. P. Richards, University of Virginia
(942-43-187)

4:00PM *On the construction of analytic models for certain*
(209) *representations of the general linear group.*
Preliminary report.
Ray A. Kunze, The University of Georgia
(942-42-174)

4:30PM *Heat Kernels of Hermitian Symmetric Spaces.*
(210) **Hongming Ding**, St. Louis University (942-35-50)

5:00PM *Generalized Watson Transforms.*
(211) **Qifu Zheng**, The College of New Jersey
(942-22-148)

5:30PM *An integral transform and unitary highest weight*
(212) *modules.*
John D. Lorch, Ball State University (942-22-41)

**Special Session on Symmetries of Knots and
Three-manifolds**

3:00 PM – 4:20 PM **Room 219, Classroom
Building Complex C**

Organizers: **Swatee Naik**, University of Nevada,
Reno
Jozef H. Przytycki, George Washington
University

3:00PM *Translating the involutory Kuperberg invariant into*
(213) *the surgery framework, and relating it to certain*
symmetries of 3-manifolds.
Fernando J. O. Souza*, **Louis H. Kauffman** and
David E. Radford, University of Illinois at Chicago
(942-57-232)

3:30PM *Ordering groups of Pure Braids and Hyperplane*
▶ (214) *Arrangements.* Preliminary report.
Djun M. Kim* and **Dale P. Rolfsen**, The University
of British Columbia (942-06-204)

4:00PM *Seifert fibered surgeries on hyperbolic knots.*
(215) Preliminary report.
Cameron McA. Gordon* and **John Luecke**,
University of Texas at Austin (942-57-249)

Bernard Russo
Associate Secretary
Irvine, California