
Program of the Sessions

Hoboken, New Jersey, April 28–29, 2001

Saturday, April 28

Meeting Registration

7:30 AM – 4:30 PM Bissinger Room, 4th Floor, Howe Center

AMS Book Sale and Exhibit

7:30 AM – 4:30 PM Bissinger Room, 4th Floor, Howe Center

Special Session on Analytic Number Theory, I

8:30 AM – 10:50 AM Room 229, Edwin A. Stevens (EAS) Hall

Organizers: **Milos A. Dostal**, Stevens Institute of Technology
Werner G. Nowak, Universität für Bodenkultur, Vienna, Austria

- 8:30AM (1) *On Minimal Expansions in Redundant Number Systems: Algorithms, Quantitative Analysis, and Extensions.*
Clemens Heuberger*, Graz University of Technology, Austria, and **Helmut Prodinger**, University of Witwatersrand, Johannesburg, South Africa (966-11-50)
- 9:00AM (2) *Lattice points in convex bodies with planar points on the boundary.*
Manfred Peter, University of Freiburg, Germany (966-11-75)
- 9:30AM (3) *The distribution of $(n\alpha)$ – sequences and Mahler's classification.*
Christoph Baxa, University of Vienna (966-11-86)
- 10:00AM (4) *The digit-expansions of a large positive integer to different bases.*
Johannes Schoisengeier, University of Vienna (966-11-71)
- 10:30AM (5) *A high dimensional lattice point problem.* Preliminary report.
Wolfgang Müller, Graz University of Technology, Austria (966-11-104)

Special Session on History of Mathematics, I

8:30 AM – 10:50 AM Room 222, Edwin A. Stevens (EAS) Hall

Organizers: **Patricia R. Allaire**, Queensborough Community College, CUNY
Robert E. Bradley, Adelphi University

- 8:30AM (6) *The Gaussian Solution to $2\cos(360/17)$.* Preliminary report.
Peter L Griffiths, London, UK. (966-01-55)
- 9:00AM (7) *Poincare's on Mathematical Truth and the Nature of Geometry.* Preliminary report.
Steven J Gimbel, Gettysburg College (966-01-15)
- 9:30AM (8) *Origins of Banach Space Theory.*
Andrew B Perry, Springfield College (966-01-17)
- 10:00AM (9) *Warren Weaver On the C.L. Dodgson Nachlass.* Preliminary report.
Francine F Abeles, Kean University (966-01-13)
- 10:30AM (10) *Mina Rees and the Founding of the Graduate School at CUNY.* Preliminary report.
Amy E Shell, United States Military Academy (966-01-09)

Special Session on Surface Geometry and Shape Perception, I

8:30 AM – 10:55 AM Room 230, Edwin A. Stevens (EAS) Hall

Organizers: **Gary R. Jensen**, Washington University
George I. Kamberov, Stevens Institute of Technology

- 8:30AM (11) *Curvature measures for discrete surfaces.* Preliminary report.
John M. Sullivan, Univ. of Illinois (966-53-173)
- 9:00AM (12) *The Structure of Pictorial Space.*
Jan J Koenderink, University of Utrecht (966-53-198)
- 9:30AM (13) *Remarks about curvatures and integrals.*
Stephen Semmes, Rice University (966-58-197)

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 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.

- 10:00AM (14) *Using a Physics-based methodology for shape and motion estimation.*
Dimitris N Metaxas, University of Pennsylvania (966-68-184)
- 10:30AM (15) *Gaussian Representations of Surfaces.* Preliminary report.
George I. Kamberov, Stevens Institute of Technology (966-53-190)

Special Session on Computational Algebraic Geometry and Its Applications, I

9:00 AM – 10:50 AM Room 329, Edwin A. Stevens (EAS) Hall

- Organizers: **Serkan Hosten**, San Francisco State University
Frank Sottile, University of Massachusetts at Amherst
- 9:00AM (16) *Asymptotics from multivariate rational generating functions.* Preliminary report.
Robin Pemantle, Ohio State University (966-05-49)
- 9:30AM (17) *The Asymptotic Growth Rate of the Mean Number of Equilibria of a Two Player Game.*
Andrew McLennan*, Econ Dept, U of Minnesota, and **Johannes Berg**, Abdus Salam International Center for Theoretical Physics (966-91-80)
- 10:00AM (18) *Applications of Cartan's Moving Frame Method to Classical Invariant Theory.* Preliminary report.
Irina A Kogan, Yale University (966-14-176)
- 10:30AM (19) *Invariant approximation of differential invariants: an algorithmic approach.*
Mireille Boutin, University of Minnesota (966-53-116)

Special Session on Singular and Degenerate Nonlinear Elliptic Boundary Value Problems, I

9:00 AM – 10:50 AM Room 106, McLean Hall

- Organizers: **Joe McKenna**, University of Connecticut
Changfeng Gui, University of Connecticut
Yung Sze Choi, University of Connecticut
- 9:00AM (20) *Two-dimensional travelling waves in suspended plates and nonlinear Schrodinger equations in free space: fission, fusion, and interactions.* Preliminary report.
Jiri Horak and **P.J. McKenna***, University of Connecticut (966-35-147)
- 9:30AM (21) *Singular concave semilinear elliptic problems.*
Junping Shi, College of William and Mary (966-35-110)
- 10:00AM (22) *A new best Sobolev inequality on Riemannian manifolds.* Preliminary report.
YanYan Li, Rutgers University, and **Tonia Ricciardi***, Università di Napoli Federico II (966-35-150)
- 10:30AM (23) *Complex Spatio-Temporal Dynamics in Acarine Populations and the Huffaker Phenomenon.* Preliminary report.
Robert A Gardner, University of Massachusetts (966-35-138)

Special Session on Ricci Curvature and Related Topics, I

9:00 AM – 10:50 AM Room 212, Edwin A. Stevens (EAS) Hall

- Organizers: **George I. Kamberov**, Stevens Institute of Technology
Christina Sormani, Lehman College, CUNY
Megan M. Kerr, Wellesley College
- 9:00AM (24) *Geodesics and Ricci Curvature.*
Zhongmin Shen, Indiana Univ.-Purdue Univ. Indianapolis (966-53-93)
- 9:30AM (25) *The Ricci Flow on non compact manifolds.*
Albert Chau, Columbia University (966-53-122)
- 10:00AM (26) *Boundaries of zero scalar curvature in the AdS/CFT Correspondence.*
Mingliang Cai* and **Greg Galloway**, University of Miami (966-53-200)
- 10:30AM (27) *A splitting theorem for Kähler manifolds with constant eigenvalues of the Ricci tensor.*
Vestislav Apostolov, Université du Québec a Montreal, **Tedi C Draghici***, Florida International University, and **Andrei Moroianu**, CMAT, Ecole Polytechnique (966-53-53)

Special Session on Stability of Nonlinear Dispersive Waves, I

9:00 AM – 10:20 AM Room 105, McLean Hall

- Organizers: **Yi Li**, Stevens Institute of Technology
Keith S. Promislow, Simon Fraser University
- 8:30AM (28) *Absolute and convective instability of spiral waves.* Preliminary report.
Bjorn Sandstede*, Ohio State University, and **Arnd Scheel**, FU Berlin (966-35-39)
- 9:00AM (29) *Asymptotic decay of tails of dispersion managed soliton.*
Vadim Zharnitsky, Bell Labs, Lucent Technologies (966-78-153)
- 9:30AM (30) *Dispersive effects in a Kuramoto-Sivashinsky/KdV system.* Preliminary report.
Alex Iosevich, University of Missouri, and **Judith R Miller***, Georgetown University (966-35-108)
- 10:00AM (31) *Modulation equations for long wavelength waves on a fluid subject to surface tension.*
C. E. Wayne, Boston University (966-35-91)

Special Session on Graph Theory (Dedicated to Frank Harary on His 80th Birthday), I

9:00 AM – 10:20 AM Room 322, Edwin A. Stevens (EAS) Hall

- Organizers: **Michael L. Gargano**, Pace University
Louis V. Quintas, Pace University
Charles Suffel, Stevens Institute of Technology
- 9:00AM (32) *The Reversible Random f-Graph Process.*
Krystyna T Balińska, The Technical University of Poznań, POLAND, and **Louis V Quintas***, Pace University (966-05-57)
- 9:30AM (33) *Skew Diagrams and Ordered Trees.*
Melkamu Zeleke* and **Robert G Rieper**, William Paterson University (966-05-41)
- 10:00AM (34) *The Eccentric Digraph of a Graph.*
Fred Buckley, Baruch College (CUNY) (966-05-19)

Special Session on Wavelets, Multiscale Analysis, and Applications, I

9:00 AM – 10:50 AM Room 308, Edwin A. Stevens (EAS) Hall

Organizers: **Ivan Selesnick**, Polytechnic University
Gerald Schuller, Bell Laboratories

- 9:00AM **enoising Using a Gaussian Scale Mixture Model in the Wavelet Domain.** Preliminary report.
▶ (35) **Vasily Strela**, New York University and Drexel University (966-62-130)
- 9:30AM **A Wavelet Approach to Chemical Concentration Calibration.**
(36) **T. Tony Cai**, Department of Statistics/The Wharton School/University of Pennsylvania (966-62-136)
- 10:00AM **Random cascades on wavelet trees and their use in analyzing and modeling natural images.**
(37) **Martin J Wainwright***, MIT, **Eero P Simoncelli**, New York University, and **Alan S Willsky**, MIT (966-62-118)
- 10:30AM **Joint Representations in Applied Mathematics.**
▶ (38) **Leon Cohen**, City University of New York (966-42-154)

Special Session on Deformation Quantization and Its Applications, I

9:15 AM – 10:50 AM Room 229A, Edwin A. Stevens (EAS) Hall

Organizers: **Siddhartha Sahi**, Rutgers University
Martin J. Andler, University of Versailles

- 9:15AM **Deformation quantization, its genesis and avatars.**
▶ (39) **Daniel H Sternheimer**, CNRS and Université de Bourgogne, France (966-81-83)
- 10:00AM Break
- 10:20AM **String Topology Revisited.** Preliminary report.
(40) **Alexander A Voronov**, Michigan State University (966-55-112)

Special Session on Computational Group Theory, I

9:30 AM – 10:50 AM Room 330, Edwin A. Stevens (EAS) Hall

Organizers: **Robert Gilman**, Stevens Institute of Technology
Alexei Myasnikov, City College, New York
Vladimir Shpilrain, City College, New York
Sean Cleary, City College, New York

- 9:30AM **Rewriting systems for groups and monoids, with applications to Gröbner bases.**
(41) **Susan M Hermiller***, University of Nebraska, and **Jonathon P McCammond**, Texas A & M University (966-20-76)
- 10:00AM **Rigidity of Coxeter groups.**
(42) **Jon McCammond***, Texas A&M University, **Noel Brady**, University of Oklahoma, **Bernhard Muehlherr**, Universitat Dortmund, and **Walter Neumann**, Barnard College, Columbia University (966-20-90)
- 10:30AM **Braid Group Representations of Low Degree.**
(43) **Edward W Formanek**, Pennsylvania State University (966-20-44)

Special Session on Matchings in Graphs and Hypergraphs, I

9:30 AM – 10:40 AM Room 323, Edwin A. Stevens (EAS) Hall

Organizers: **Alexander Barvinok**, University of Michigan
Alex Samorodnitsky, Institute for Advanced Study

- 9:30AM **A generalization of mixed discriminants and an attempt of Quantum matching theory.** Preliminary report.
▶ (44) **Leonid Gurvits**, Los Alamos National Laboratory (966-05-106)
- 10:10AM **An inequality for polymatroid functions and its applications.** Preliminary report.
(45) **Andre Boros**, Rutcor, Rutgers University, **Khaled Elbassioni**, Department of Computer Science, Rutgers University, **Vladimir Gurvich**, Rutcor, Rutgers University, and **Leonid Khachiyan***, Department of Computer Science, Rutgers University (966-68-134)

Invited Address

11:00 AM – 11:50 AM DeBaun Theatre, Edwin A. Stevens (EAS) Hall

- (46) **A Gromov-Witten invariant in the real world.**
Frank Sottile, University of Massachusetts, Amherst (966-14-02)

Invited Address

1:30 PM – 2:20 PM DeBaun Theatre, Edwin A. Stevens (EAS) Hall

- (47) **Complexity and geometry of counting.**
Alexander Barvinok, University of Michigan, Ann Arbor (966-05-01)

Special Session on Analytic Number Theory, II

2:30 PM – 4:50 PM Room 229, Edwin A. Stevens (EAS) Hall

Organizers: **Milos A. Dostal**, Stevens Institute of Technology
Werner G. Nowak, Universität für Bodenkultur, Vienna, Austria

- 2:30PM **Some properties of the complex sum of digits function.**
(48) **Joerg M Thuswaldner**, Montanuniversitaet Leoben (966-11-105)
- 3:00PM **On the sum-of-digits function of linear recurrence number systems.**
(49) **Mario Lamberger**, Graz University of Technology (966-11-111)
- 3:30PM **On the equation $G_n(x) = G_m(P(x))$.** Preliminary report.
(50) **Clemens Fuchs**, Graz University of Technology (966-11-95)
- 4:00PM **Lipschitz Summation.**
(51) **Paul C Pases***, Villanova University, and **Wladimir de Azevedo Pribitkin**, Princeton University (966-11-06)
- 4:30PM **A variant of a conjecture of Lehmer.**
(52) **Florian Luca***, UNAM, and **Michal Krizek**, Czech Academy of Sciences (966-11-14)

Special Session on Computational Algebraic Geometry and Its Applications, II

2:30 PM – 4:50 PM Room 329, Edwin A. Stevens (EAS) Hall

Organizers: **Serkan Hosten**, San Francisco State University
Frank Sottile, University of Massachusetts at Amherst

- 2:30PM ▶ (53) *Descartes' Rule for Trinomials in the Plane and Beyond.*
Tien Y. Li, Michigan State University, **Joseph M. Rojas***, Texas A&M University, and **Xiaoshen Wang**, University of Arkansas at Little Rock (966-14-187)
- 3:00PM ▶ (54) *Primary Decomposition of Zero-Dimensional Ideals.*
Chris Monico, University of Notre Dame (966-13-121)
- 3:30PM (55) *Sparse Resultants of Composed Polynomials.*
Manfred Minimair, North Carolina State University (966-14-65)
- 4:00PM (56) *Using Monodromy to decompose Solution Sets of Polynomial Systems into Irreducible Components.* Preliminary report.
Andrew J Sommese, University of Notre Dame, **Jan Verschelde***, University of Illinois at Chicago, and **Charles W Wampler**, General Motors Research Laboratories (966-65-68)
- 4:30PM (57) *Polynomial root finding using iterated eigenvalue computation.* Preliminary report.
Steven J Fortune, Bell Labs (966-65-47)

Special Session on Computational Group Theory, II

2:30 PM – 5:00 PM Room 330, Edwin A. Stevens (EAS) Hall

Organizers: **Robert Gilman**, Stevens Institute of Technology
Alexei Myasnikov, City College, New York
Vladimir Shpilrain, City College, New York
Sean Cleary, City College, New York

- 2:30PM (58) *On the number of sixth powers needed to define the Burnside group $B(2, 6)$.* Preliminary report.
Charles C Sims, Rutgers University (966-20-96)
- 3:00PM ▶ (59) *The Membership Problem for Baumslag-Solitar Groups.* Preliminary report.
Paul E. Schupp, University of Illinois at Urbana-Champaign (966-20-182)
- 3:30PM (60) *Algorithms for finite linear groups.* Preliminary report.
William M Kantor, University of Oregon, Eugene, Oregon, and **Ákos Seress***, The Ohio State University, Columbus, Ohio (966-20-79)
- 4:00PM Break
- 4:10PM (61) *Representing subgroups of finitely presented groups by quotient subgroups.*
Alexander J Hulpke, Ohio State University (966-20-29)
- 4:40PM (62) *The Word Problem in Groups.*
Derek F Holt, University of Warwick (966-20-87)

Special Session on Singular and Degenerate Nonlinear Elliptic Boundary Value Problems, II

2:30 PM – 4:50 PM Room 106, McLean Hall

Organizers: **Joe McKenna**, University of Connecticut

Changfeng Gui, University of Connecticut
Yung Sze Choi, University of Connecticut

- 2:30PM (63) *On the blow up of 3-harmonic map.*
Yung S. Choi*, university of connecticut, **Leung F. Cheung**, hong kong polytechnic university, **Chao N. Chen**, national changhua university of education, taiwan, and **Chun K. Law**, national sun yat-sen university, taiwan (966-35-115)
- 3:00PM (64) *On quasilinear parabolic equations which admits global solutions for initial data with unrestricted growth.*
Ying C. Kwong, Northern Illinois University (966-35-113)
- 3:30PM (65) *A Two Dimensional Riemann Problem for the Pressure-Gradient system of Equations.*
Kyungwoo Song and **Yuxi Zheng***, Indiana University (966-35-124)
- 4:00PM (66) *Boundary Value Problems for Nonlinear First-Order Partial Differential Equations.*
Baisheng Yan, Michigan State University (966-35-97)
- 4:30PM (67) *A free boundary problem for a quasilinear degenerate elliptic equation: Weak shock reflection in the UTSD equation.*
Sunčica Čanić, **Barbara L. Keyfitz** and **Eun H. Kim***, University of Houston (966-35-203)

Special Session on History of Mathematics, II

2:30 PM – 4:50 PM Room 222, Edwin A. Stevens (EAS) Hall

Organizers: **Patricia R. Allaire**, Queensborough Community College, CUNY
Robert E. Bradley, Adelphi University

- 2:30PM ▶ (68) *The Birth of an Independent Trigonometry: Revolution and Conflict in Tenth-Century Islamic Spherical Astronomy.*
Glen R Van Brummelen, Bennington College (966-01-23)
- 3:00PM ▶ (69) *François-Joseph Servois: a Pioneer of 'Soft' Analysis.*
Robert E Bradley, Adelphi University (966-01-25)
- 3:30PM ▶ (70) *Euler's Three Proofs of the Euler-Fermat Theorem.* Preliminary report.
Edward Sandifer, Western Connecticut State U (966-01-24)
- 4:00PM ▶ (71) *Maria Gaetana Agnesi as seen by the historian Antonio F. Frisi.* Preliminary report.
Antonella Cupillari, Penn State Erie-The Behrend College (966-01-22)
- 4:30PM ▶ (72) *Mathematicians on Their Past—The Historiography of Mathematics.* Preliminary report.
Thomas L. Drucker, University of Wisconsin (966-01-28)

Special Session on Matchings in Graphs and Hypergraphs, II

2:30 PM – 4:20 PM Room 323, Edwin A. Stevens (EAS) Hall

Organizers: **Alexander Barvinok**, University of Michigan
Alex Samorodnitsky, Institute for Advanced Study

- 2:30PM (73) *Approximating the permanent.*
Mark Jerrum, Edinburgh, **Alistair Sinclair**, Berkeley, and **Eric Vigoda***, Edinburgh (966-68-84)

- 3:10PM (74) *Remarks on the complexity of RAS algorithm, application in permanent and perfect matching, and a generalization in scaling linear operators over the cone of positive definite matrices.* Preliminary report.
Bahman Kalantari, Rutgers University (966-15-163)
- 3:50PM (75) *Applications of Sinkhorn balancing: low-cost approximations for hard problems.*
Francis Sullivan*, IDA Center for Computing Sciences, and **Isabel Beichl**, NIST (966-05-20)

Special Session on Ricci Curvature and Related Topics, II

2:30 PM – 4:50 PM Room 212, Edwin A. Stevens (EAS) Hall

Organizers: **George I. Kamberov**, Stevens Institute of Technology
Christina Sormani, Lehman College, CUNY
Megan M. Kerr, Wellesley College

- 2:30PM (76) *Ricci and Mean curvature – from combinatorial to smooth.* Preliminary report.
Igor Rivin*, University of Manchester and Temple University, and **Jean-Marc Schlenker**, Universite Paul Sabatier, Toulouse (966-53-128)
- 3:00PM (77) *Symplectic connections of Ricci-type.* Preliminary report.
Simone Gutt, Universite Libre de Bruxelles (966-53-139)
- 3:30PM Discussion
- 4:00PM (78) *Solutions of the Maxwell-Einstein Equations.*
Nina Zipser, MIT (966-53-81)
- 4:30PM (79) *Conformally invariant differential equations and the curvature tensor of a 4-manifold.*
Paul Yang, Institute for Advanced Study and Univ. of Southern California (966-53-202)

Special Session on Quantum Error Correction and Related Aspects of Coding Theory, I

2:30 PM – 5:20 PM Room 104, McLean Hall

Organizers: **Harriet S. Pollatsek**, Mount Holyoke College
M. Beth Ruskai, University of Massachusetts at Lowell

- 2:30PM (80) *Multiplicativity of norms for some product channels.*
Christopher King, Northeastern University (966-81-69)
- 3:00PM (81) *The Power of Generalized Measurements (POVMs).*
Christopher A Fuchs, Bell Labs, Lucent Technologies (966-81-54)
- 3:30PM (82) *On Quantum Source Coding Problems Beyond the Schumacher Compression.* Preliminary report.
Emina Soljanin, Bell Labs, Lucent (966-81-126)
- 4:00PM (83) *Quantum Data Compression of Ensembles of Mixed States with Commuting Density Operators.*
Gerhard Kramer* and **Serap A Savari**, Bell Labs, Lucent Technologies (966-94-145)
- 4:30PM (84) *Quantum decoding.*
David Meyer, University of California at San Diego (966-94-186)
- 5:00PM (85) *Entanglement-assisted capacity of quantum channels.* Preliminary report.
Peter W. Shor, AT&T Labs Research (966-94-185)

Special Session on Surface Geometry and Shape Perception, II

2:30 PM – 4:50 PM Room 230, Edwin A. Stevens (EAS) Hall

Organizers: **Gary R. Jensen**, Washington University
George I. Kamberov, Stevens Institute of Technology

- 2:30PM (86) *Equivalence of Catadioptric Projections and Mappings of the Sphere.*
Christopher Geyer and **Kostas Daniilidis***, University of Pennsylvania (966-51-178)
- 3:30PM (87) *Surfaces of revolution with periodic mean curvature.* Preliminary report.
Katsuei Kenmotsu, Tohoku University (966-53-63)
- 4:00PM (88) *Recent progress on the geometry of constant mean curvature surfaces.* Preliminary report.
Rob Kusner, University of Massachusetts (966-53-67)
- 4:30PM Discussion

Special Session on Graph Theory (Dedicated to Frank Harary on His 80th Birthday), II

2:30 PM – 4:20 PM Room 322, Edwin A. Stevens (EAS) Hall

Organizers: **Michael L. Gargano**, Pace University
Louis V. Quintas, Pace University
Charles Suffel, Stevens Institute of Technology

- 2:30PM (89) *Graphs with integral spectra.*
Krystyna T Balińska, The Technical University of Poznań, Poland (966-05-21)
- 3:00PM (90) *Chords of longest circuits of graphs embedded in projective plane.* Preliminary report.
Xuechao Li* and **Cunquan Zhang**, West Virginia University (966-05-37)
- 3:30PM (91) *Almost-graphic matroids.*
Sandra R Kingan*, Pennsylvania State University at Harrisburg, and **Manoel Lemos**, Universidade Federal de Pernambuco (966-05-169)
- 4:00PM (92) *Paintable Graphs.* Preliminary report.
Joseph F Malerba*, **Michael L Gargano**, Pace University, and **Marty Lewinter**, State University of New York at Purchase (966-05-189)

Special Session on Wavelets, Multiscale Analysis, and Applications, II

2:30 PM – 4:50 PM Room 308, Edwin A. Stevens (EAS) Hall

Organizers: **Ivan Selesnick**, Polytechnic University
Gerald Schuller, Bell Laboratories

- 2:30PM (93) *Frames of Translates in Abstract Hilbert Spaces and the Generalized Frame Multiresolution Analysis.* Preliminary report.
Manos I Papadakis, University of Houston (966-41-48)
- 3:00PM (94) *Constructions of wavelet frames.* Preliminary report.
Alexander Petukhov, University of South Carolina (966-41-27)
- 3:30PM (95) *Directional, Shift-Insensitive, Complex-Wavelet Transforms with Controllable Redundancy.*
Felix C Fernandes*, Rice University, **Rutger van Spaendonck**, Delft University of Technology, and **Sidney C Burrus**, Rice University (966-00-100)

- 4:00PM *Wavelet Analysis through Polysplines and the curvelets and ridgelets of Donoho - a comparative analysis.* Preliminary report.
Ognyan I Kounchev, University of Wisconsin-Madison (966-41-70)
- 4:30PM *Lapped Transforms via Time-Domain Pre- and Post-Processing.*
Trac D Tran, The Johns Hopkins University (966-94-151)

Special Session on Stability of Nonlinear Dispersive Waves, II

- 3:00 PM – 4:50 PM **Room 105, McLean Hall**
 Organizers: **Yi Li**, Stevens Institute of Technology
Keith S. Promislow, Simon Fraser University
- 3:00PM *Scaling, Stability and Blow-up for Nonlinear Dispersive Equations: The Critical Case.*
Jaime Angulo, IMECC, UNICAMP, Campinas, Brasil, **Jerry L Bona***, University of Texas at Austin, **Felipe Linares**, IMPA, Rio de Janeiro, Brasil, and **Marcia Scialom**, IMECC, UNICAMP, Campinas, Brasil (966-35-175)
- 3:30PM *Stability of waves in perturbed Hamiltonian systems.*
Todd M Kapitula, University of New Mexico (966-35-195)
- 4:00PM *Instability of standing waves for coupled Nonlinear Schrodinger Equations.* Preliminary report.
Jian Deng, Brown University (966-35-180)
- 4:30PM *Propagating Waves in Neuronal Networks.*
Alice C Yew, The Ohio State University (966-34-142)

Special Session on Deformation Quantization and Its Applications, II

- 3:00 PM – 5:00 PM **Room 229A, Edwin A. Stevens (EAS) Hall**
 Organizers: **Siddhartha Sahi**, Rutgers University
Martin J. Andler, University of Versailles
- 3:00PM *Linearization of Poisson actions, singular values of matrix products, and the hyperbolic Duflou isomorphism.*
Anton Alekseev, Uppsala University, **Eckhard Meinrenken**, University of Toronto, and **Chris Woodward***, Rutgers, New Brunswick (966-53-66)
- 3:40PM *Hochschild cohomology for the Kontsevich's graphs.*
Mohsen Masmoudi* and **Didier Arnal**, Université de Metz (France) (966-16-94)
- 4:10PM Break
- 4:30PM *Semiclassical geometry of quantum line bundles and Morita equivalence of star products.*
Henrique Bursztyn, U.C. Berkeley (966-53-191)

Department of Mathematics Reception

5:00 PM – 7:00 PM **Great Hall, Samuel Williams Library**

Sunday, April 29

Meeting Registration

8:00 AM – NOON **Bissinger Room, 4th Floor, Howe Center**

AMS Book Sale and Exhibit

8:00 AM – NOON **Bissinger Room, 4th Floor, Howe Center**

Special Session on Stability of Nonlinear Dispersive Waves, III

- 8:00 AM – 10:30 AM **Room 105, McLean Hall**
 Organizers: **Yi Li**, Stevens Institute of Technology
Keith S. Promislow, Simon Fraser University
- 8:00AM *Spectrally stable encapsulated-vortex solutions of focusing-defocusing nonlinear Schrödinger equations.* Preliminary report.
Robert L Pego*, University of Maryland, College Park, and **Henry A Warchall**, University of North Texas (966-35-135)
- 8:30AM *A normal form for nonlinear resonance of embedded solitons.* Preliminary report.
Dmitry E Pelinovsky*, McMaster University (Canada), and **Jianke Yang**, University of Vermont (966-35-40)
- 9:00AM *Regular traveling waves in a one-dimensional network of theta neurons.*
Remus Osan, University of Pittsburg, **Jonathan Rubin*** and **Bard Ermentrout**, University of Pittsburg (966-34-45)
- 9:30AM Break
- 9:40AM *Nonlinear Dispersive Waves in Periodic Structures.*
Michael I Weinstein, Mathematical Sciences Research - Bell Laboratories (966-35-167)
- 10:10AM *Pulse dynamics in coupled reaction-diffusion equations.*
Arjen Doelman, University of Amsterdam, and **Tasso J Kaper***, Boston University (966-35-170)

Special Session on Computational Algebraic Geometry and Its Applications, III

- 8:30 AM – 10:50 AM **Room 329, Edwin A. Stevens (EAS) Hall**
 Organizers: **Serkan Hosten**, San Francisco State University
Frank Sottile, University of Massachusetts at Amherst
- 8:30AM *Maximum Distance Separable Convolutional Codes, Constructions and Decoding.* Preliminary report.
Joachim Rosenthal* and **Roxana Smarandache**, University of Notre Dame (966-94-132)
- 9:00AM *Hypergeometric systems and embedded primes.* Preliminary report.
Laura F Matusevich, University of California at Berkeley (966-05-62)
- 9:30AM *Classifying weakly \mathcal{A} -graded algebras.* Preliminary report.
James J Madden, Wesleyan U. and Louisiana State U. (966-13-164)
- 10:00AM *Supernormal vector configurations.* Preliminary report.
Serkan Hoşten, San Francisco State University, **Diane Maclagan***, Institute for Advanced Study, and **Bernd Sturmfels**, UC Berkeley (966-13-188)
- 10:30AM *Mean versus random exponents for unitarily invariant probability measures on $GL(n, C)$.*
Mike Shub*, IBM Yorktown Heights, and **Jean-Pierre Dedieu**, University Paul Sabatier (966-14-196)

Special Session on Quantum Error Correction and Related Aspects of Coding Theory, II

8:30 AM – 10:50 AM Room 104, McLean Hall

Organizers: **Harriet S. Pollatsek**, Mount Holyoke College
M. Beth Ruskai, University of Massachusetts at Lowell

- 8:30AM *Quantum biweight enumerators.* Preliminary report. (115) **Eric M Rains**, AT&T Labs–Research (966-81-98)
- 9:00AM *Some Properties of Clifford Codes.* (116) **Andreas Klappenecker**, Texas A&M University (966-94-46)
- 9:30AM *Quantum error-correcting codes associated with graphs.* (117) **Dirk M Schlingemann*** and **Reinhard F Werner**, TU-Braunschweig (966-81-78)
- 10:00AM *Nonbinary Quantum Codes and Asymptotically Good Quantum Codes.* (118) **Alexei Ashikhmin**, Bell Labs, Lucent Technologies (966-81-156)
- 10:30AM *Extracting an entangled state of $n - t$ qubits from an n -qubit entangled state after errors at t sites.* (119) **Chui-Ping Yang*** and **Julio Gea-Banacloche**, University of Arkansas (966-81-74)

Special Session on Surface Geometry and Shape Perception, III

8:30 AM – 10:55 AM Room 230, Edwin A. Stevens (EAS) Hall

Organizers: **Gary R. Jensen**, Washington University
George I. Kamberov, Stevens Institute of Technology

- 8:30AM *Rational minimal surfaces through the UP-iteration.* (120) **Catherine McCune**, University of Connecticut (966-53-204)
- 9:00AM *Coordinates and the Associated Non-Euclidean Geometry.* (121) **Stephen Pizer*** and **Andrew Thall**, University of North Carolina (966-68-205)
- 9:30AM *Self-Linking of Torus Knots on the Three-Sphere and the Geometry of the Osculating Tube.* (122) **Thomas F Banchoff**, Brown University (966-53-155)
- 10:00AM *Landmark matching via large deformation diffeomorphisms.* (123) **Sarang Joshi**, University of North Carolina (966-68-206)
- 10:30AM *Some Infinite Mass Limits Associated with Mappings and Fractional Power Integral-geometric Functionals.* Preliminary report. (124) **Robert M Hardt**, Rice University (966-49-157)

Special Session on Computational Group Theory, III

9:00 AM – 10:50 AM Room 330, Edwin A. Stevens (EAS) Hall

Organizers: **Robert Gilman**, Stevens Institute of Technology
Alexei Myasnikov, City College, New York
Vladimir Shpilrain, City College, New York
Sean Cleary, City College, New York

- 9:00AM *Geometric and algorithmic properties of free-by-cyclic groups.* Preliminary report. (125) **Martin R Bridson**, Oxford University (966-20-152)

- 9:30AM *Random methods in group theory.* (126) **Charles Leedham-Green**, QMW, London (966-20-183)

- 10:00AM *A new approach to the Combination Theorem.* Preliminary report. (127) **Ilya Kapovich**, University of Illinois at Urbana-Champaign (966-20-120)

- 10:30AM *Varietal Amalgams and a Freiheitssatz.* (128) **Benjamin Fine***, Fairfield University, **Anthony Gaglione**, US Naval Academy, **Alexei Myasnikov**, City College of New York, **Gerhard Rosenberger**, University of Dortmund, and **Denis Spellman**, Temple University (966-20-144)

Special Session on Singular and Degenerate Nonlinear Elliptic Boundary Value Problems, III

9:00 AM – 10:50 AM Room 106, McLean Hall

Organizers: **Joe McKenna**, University of Connecticut
Changfeng Gui, University of Connecticut
Yung Sze Choi, University of Connecticut

- 9:00AM *Semilinear elliptic equations in strips: uniqueness and existence.* Preliminary report. (129) **Joe McKenna**, University of Connecticut, and **Changfeng Gui***, University of Connecticut and University of British Columbia (966-35-179)

- 9:30AM *Annular rings: existence and stability.* (130) **David S Morgan** and **Tasso J Kaper***, Boston University (966-35-168)

- 10:00AM *A simple ODE And Anisotropic Curvature Flows.* Preliminary report. (131) **Juncheng Wei**, Chinese University of Hong Kong (966-35-158)

- 10:30AM *Periodic solutions and connecting orbits of Hamiltonian systems.* (132) **Chao-Nien Chen*** and **Shyuh-yaur Tzeng**, National Changhua University of Education (966-34-123)

Special Session on Ricci Curvature and Related Topics, III

9:00 AM – 10:50 AM Room 212, Edwin A. Stevens (EAS) Hall

Organizers: **George I. Kamberov**, Stevens Institute of Technology
Christina Sormani, Lehman College, CUNY
Megan M. Kerr, Wellesley College

- 9:00AM *Isospectral metrics on spheres and other manifolds.* (133) **Carolyn S Gordon**, Dartmouth College (966-58-127)

- 9:30AM *Conditions for nonnegative curvature on vector bundles and sphere bundles.* (134) **Kristopher R Tapp**, SUNY Stony Brook (966-53-88)

- 10:00AM *Metrics of positive Ricci curvature on vector bundles over nilmanifolds.* (135) **Igor Belegradek***, California Institute of Technology, and **Guofang Wei**, University of California Santa Barbara (966-53-36)

- 10:30AM *Polar actions.* (136) **Andreas M Kollross**, Universitaet Augsburg (966-53-137)

Special Session on Deformation Quantization and Its Applications, III

9:00 AM – 10:50 AM Room 229A, Edwin A. Stevens (EAS) Hall

Organizers: **Siddhartha Sahi**, Rutgers University
Martin J. Andler, University of Versailles

9:00AM (137) *Traces for star products on duals of Lie algebras.* Preliminary report.

Simone Gutt, Universite Libre de Bruxelles (966-53-140)

9:40AM (138) *Iterated Integrals and the Campbell-Baker-Hausdorff Formula.* Preliminary report.

Vinay Kathotia, University of California Davis (966-53-119)

10:20AM (139) *Poisson bracket, deformed bracket and gauge group actions.*

Dominique Manchon, Institut Elie Cartan (CNRS), Nancy (966-16-102)

Special Session on Graph Theory (Dedicated to Frank Harary on His 80th Birthday), III

9:00 AM – 10:20 AM Room 322, Edwin A. Stevens (EAS) Hall

Organizers: **Michael L. Gargano**, Pace University
Louis V. Quintas, Pace University
Charles Suffel, Stevens Institute of Technology

9:00AM (140) *Full L(2,1)-colorings of Graphs and the Channel Assignment Problem.*

Peter C Fishburn, AT&T Labs, and **Fred S Roberts***, Rutgers University (966-05-26)

9:30AM (141) *Small Cycle Cover of 2-connected Cubic Graphs.*

Xiangwen Li* and **Hong-Jian Lai**, West Virginia University (966-05-34)

10:00AM (142) *Balanced Digraphs.*

► **Michael L Gargano**, Pace University, SCSIS (966-05-59)

Special Session on Matchings in Graphs and Hypergraphs, III

9:30 AM – 10:40 AM Room 323, Edwin A. Stevens (EAS) Hall

Organizers: **Alexander Barvinok**, University of Michigan
Alex Samorodnitsky, Institute for Advanced Study

9:30AM (143) *Line Graphs and Forbidden Induced Subgraphs.*

► **Hong-Jian Lai***, West Virginia University, and **Lubo Soltes**, Memphis, TN (966-05-31)

10:10AM (144) *Vertex Arboricity and Girth.* Preliminary report.

Zhan Mingquan* and **Lai Hongjian**, West Virginia University (966-05-33)

Invited Address

11:00 AM – 11:50 AM Room 118, Burchard Building

(145) *Combinatorics, quantum computers, and cellular phones.*
Robert Calderbank, AT&T Laboratories Research (966-05-03)

Invited Address

1:30 PM – 2:20 PM Room 118, Burchard Building

(146) *On Tarski's problems.*
Alexei Miasnikov, City College, New York

Special Session on Computational Algebraic Geometry and Its Applications, IV

2:30 PM – 4:50 PM Room 329, Edwin A. Stevens (EAS) Hall

Organizers: **Serkan Hosten**, San Francisco State University

Frank Sottile, University of Massachusetts at Amherst

2:30PM (147) *Applications of the Groebner basis in statistics.*

Ian H Dinwoodie, Tulane University (966-62-177)

3:00PM (148) *Computing Cohomology.* Preliminary report.

Gregory G Smith, UC Berkeley (966-14-181)

3:30PM (149) *Solutions to a polynomial system arising in biophysics.*

► **Jeff Phan**, Columbia University (966-00-129)

4:00PM (150) *Solving the Selesnick-Burrus Filter Design Equations (Preliminary Report).* Preliminary report.

John B Little, College of the Holy Cross (966-93-131)

4:30PM (151) *The use of Groebner bases in the design of wavelets.*

Ivan W Selesnick, Polytechnic University (966-42-82)

Special Session on Computational Group Theory, IV

2:30 PM – 4:50 PM Room 330, Edwin A. Stevens (EAS) Hall

Organizers: **Robert Gilman**, Stevens Institute of Technology

Alexei Myasnikov, City College, New York

Vladimir Shpilrain, City College, New York

Sean Cleary, City College, New York

2:30PM (152) *Generalised tetrahedron groups.* Preliminary report.

► **Gerhard Rosenberger**, University of Dortmund (966-20-192)

3:00PM (153) *Positively Generated Subgroups of Free Groups and the Hanna Neumann Conjecture.*

Bilal Khan, City University of New York, Graduate Center (966-20-77)

3:30PM (154) *Evolutionary Algorithm in Coset Enumeration.*

► **Li-Tien Wang**, Stevens Institute of Technology (966-20-56)

4:00PM (155) *Finitely generated malnormal subgroups of free groups.*

Toshiaki Jitsukawa, CUNY Graduate Center and CUNY City College (966-20-148)

4:30PM (156) *Growth and Gelfand-Kirillov superdimension for semigroups.* Preliminary report.

Lev M. Shneerson, Baruch College, The City University of New York (966-20-125)

Special Session on Matchings in Graphs and Hypergraphs, IV

2:30 PM – 5:00 PM Room 323, Edwin A. Stevens (EAS) Hall

Organizers: **Alexander Barvinok**, University of Michigan

Alex Samorodnitsky, Institute for Advanced Study

- 2:30PM *Generalization of Hall's Theorem to Families of Hypergraphs.* (157)
Ron Aharoni, Technion, **Maria Chudnovsky***, Princeton University, and **Andrei Kotlov**, CWI (966-05-60)
- 3:10PM *Hypergraph Matching and Homology.* (158)
Roy Meshulam, IAS/Technion (966-05-146)
- 3:50PM *On phase transition for the hard-core model on Z^d .* (159)
 Preliminary report.
Jeffry N. Kahn* and **David Galvin**, Rutgers University (966-70-101)
- 4:30PM *Triangle factors in pseudo-random graphs.* (160)
 Preliminary report.
Michael Krivelevich, Tel Aviv University, **Benny Sudakov***, Princeton University and IAS, and **Tibor Szabo**, ETH (966-05-149)

Special Session on Ricci Curvature and Related Topics, IV

2:30 PM – 4:20 PM Room 212, Edwin A. Stevens (EAS) Hall

Organizers: **George I. Kamberov**, Stevens Institute of Technology
Christina Sormani, Lehman College, CUNY
Megan M. Kerr, Wellesley College

- 2:30PM *Sasakian-Einstein Geometry and Algebraic Geometry.* (161)
Charles P Boyer, University of New Mexico (966-53-107)
- 3:00PM *Minimal Submanifolds of Kähler-Einstein Manifolds.* (162)
Isabel M.C. Salavessa, Instituto Superior Tecnico (966-53-109)
- 3:30PM *Affine Spheres and Kähler-Einstein Metrics.* (163)
John C Loftin, Columbia University (966-53-92)
- 4:00PM *Ricci Curvature and Seiberg-Witten Theory.* (164)
Claude R LeBrun, SUNY at Stony Brook (966-53-43)

Special Session on Quantum Error Correction and Related Aspects of Coding Theory, III

2:30 PM – 3:50 PM Room 104, McLean Hall

Organizers: **Harriet S. Pollatsek**, Mount Holyoke College
M. Beth Ruskai, University of Massachusetts at Lowell

- 2:30PM *Parafermionic Quantum Computation.* (165)
Wu Lian-Ao and **Daniel A Lidar***, University of Toronto (966-81-89)
- 3:00PM *Pauli Exchange Errors and the Symmetric Group.* (166)
Mary Beth Ruskai, University of Massachusetts Lowell (966-81-143)
- 3:30PM *Beyond the Clifford Group.* Preliminary report. (167)
Daniel E Gottesman, UC Berkeley (966-81-165)

Special Session on Surface Geometry and Shape Perception, IV

2:30 PM – 3:55 PM Room 230, Edwin A. Stevens (EAS) Hall

Organizers: **Gary R. Jensen**, Washington University
George I. Kamberov, Stevens Institute of Technology

- 2:30PM *Prescribing Gaussian Curvature in Negative Case.* (168)
Wenxiong Chen*, Southwest Missouri State University, and **Congming Li**, University of Colorado at Boulder (966-53-162)

- 3:00PM *Second order conformal deformations of surfaces and Darboux transformations.* Preliminary report. (169)
Emilio Musso, Università dell'Aquila (966-53-114)
- 3:30PM *Laguerre isothermic surfaces: deformation and integrable systems.* (170)
Lorenzo Nicolodi, University of Parma (966-51-172)

Special Session on Graph Theory (Dedicated to Frank Harary on His 80th Birthday), IV

2:30 PM – 4:20 PM Room 322, Edwin A. Stevens (EAS) Hall

Organizers: **Michael L. Gargano**, Pace University
Louis V. Quintas, Pace University
Charles Suffel, Stevens Institute of Technology

- 2:30PM *Pancentral Graphs.* (171)
Marty Lewinter*, Purchase College, and **David Aulicino**, Bryam Hills High School (966-05-18)
- 3:00PM *Degree Sequences—Analysis and Synthesis.* Preliminary report. (172)
Frank Boesch* and **Charles Suffel**, Stevens Institute of Technology (966-05-32)
- 3:30PM *Degree Sequences - Analysis and Synthesis - Part II.* (173)
Charles L Suffel* and **Frank T Boesch**, Stevens Institute of Technology (966-05-61)
- 4:00PM *Achievement and Avoidance Games on geometries, graphs, grids, groups and numbers.* (174)
Frank Harary, New Mexico State University (966-05-194)

Session for Contributed Papers

2:45 PM – 5:25 PM Room 231, Edwin A. Stevens (EAS) Hall

- 2:45PM *The Integral Brick Problem.* (175)
Susil K Jena, Bhubaneswar, Orissa (966-11-52)
- 3:00PM *Primitive polynomials over finite fields with two coefficients prescribed in advance.* Preliminary report. (176)
Donald D Mills, USMA (966-11-85)
- 3:15PM *Analysis of Spectrum on $Sl(3,Z)Sl(3,R)/So(3,R)$.* (177)
Nam Jong Moh, Queensborough Community College, CUNY (966-11-133)
- 3:30PM *Invariant Means.* (178)
Alan L Horwitz, Penn State University (966-26-174)
- 3:45PM *Criteria for normality of lattices.* Preliminary report. (179)
Carmen D Vlad, Pace University (966-28-42)
- 4:00PM *Application of Monodromy Data Method on the Fifth Painlevé Transcendent.* (180)
Youmin Lu*, Bloomsburg University, and **Zhoude Shao**, Millersville University (966-34-58)
- 4:15PM *Solution of first order cubic differential equation.* (181)
Ali A Salim, Amman-city center (966-34-64)
- 4:30PM *Uniqueness of Semilinear Inverse Problem.* Preliminary report. (182)
Chaochun Qu, Yunnan University, and **Ping Wang***, Penn State University (966-35-07)
- 4:45PM *Continuous function spaces and the locally convex property (db).* Preliminary report. (183)
Aaron R. Todd*, Baruch College, CUNY, and **Hermann Render**, Gerhard-Mercator-Universität Duisburg (966-46-166)
- 5:00PM *Condition $lg \epsilon$ and homogeneous torsion-free groups.* Preliminary report. (184)
Peter Loth, Sacred Heart University (966-22-103)

- 5:15PM *The JR(ligge) Event Outcome and the*
 (185) *$D(u)^{**h}XD(u)^{**h}$ Effects.* Preliminary report.
C. S. Felicitas* and **M. W. Auslander**, CFCTE
 Foundation and the Gottlieb Library (966-22-08)

Special Session on Deformation Quantization and Its Applications, IV

3:00 PM – 4:50 PM Room 229A, Edwin A. Stevens (EAS) Hall

Organizers: **Siddhartha Sahi**, Rutgers University
Martin J. Andler, University of
 Versailles

- 3:00PM *Convolution of invariant distribution on Lie groups.*
 (186) **Martin Andler**, Université de Versailles (France),
Siddhartha Sahi, Rutgers University, and **Charles**
Torossian*, CNRS-Ecole Normale Supérieure
 (966-81-72)

- 3:40PM *Kontsevich quantization and analysis on Lie*
 (187) *supergroups.*
Martin Andler, Université de
 Versailles-Saint-Quentin, **Alexander Dvorsky***,
 University of Miami, and **Siddhartha Sahi**, Rutgers
 University (966-53-38)

- 4:20PM *Equivariant star products on coadjoint orbits.*
 (188) Preliminary report.
Ranee Brylinski, Penn State University
 (966-53-117)

Lesley M. Sibner
 Associate Secretary
 Brooklyn, New York