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# Program of the Sessions

Boulder, Colorado, October 2-4, 2003

## Thursday, October 2

### Meeting Registration

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8:00 AM – 4:00 PM Lobby, Mathematics Building

### AMS Exhibit and Book Sale

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8:00 AM – 4:00 PM Lobby, Mathematics Building

### Special Session on Algebras, Lattices and Varieties, I

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9:00 AM – 10:50 AM Room 151 (1st Floor),  
Engineering Center (ECCR)

Organizers: **Keith A. Kearnes**, University of Colorado, Boulder  
**Agnes Szendrei**, Bolyai Institute  
**Walter Taylor**, University of Colorado, Boulder

- 9:00AM *Issues and images in congruence*  
(1) *meet-semidistributivity*. Preliminary report.  
**Kirby A Baker**, UCLA (989-08-84)
- 9:30AM *The finite basis problem for finitely generated*  
(2) *quasi-varieties*. Preliminary report.  
**Ralph N McKenzie**, Vanderbilt University  
(989-08-140)
- 10:30AM *Endoprimal abelian groups*. Preliminary report.  
▶ (3) **R Göbel**, Universität Duisburg-Essen, Germany, **K Kaarli**, University of Tartu, Estonia, **L Márki\***, Rényi Institute, Hungary, and **S L Wallutis**, Universität Duisburg-Essen, Germany (989-20-116)

### Special Session on Geometric Methods in Partial Differential Equations, I

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9:00 AM – 10:50 AM Room 1B 40 (Basement),  
Engineering Center (ECCR)

Organizers: **Jeanne N. Clelland**, University of Colorado, Boulder

**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

**George R. Wilkins**, University of Hawaii

- 9:00AM *Nonclassical Potential Solutions of Partial*  
▶ (4) *Differential Equations*.  
**George W. Bluman\*** and **Zhenya Yan**, University of British Columbia (989-35-139)
- 10:00AM *Second order families of associative submanifolds*  
(5) *of  $\mathbb{R}^7$* . Preliminary report.  
**Robert L Bryant**, Duke University (989-53-41)

### Special Session on Groupoids in Analysis and Geometry, I

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9:00 AM – 10:50 AM Room 133 (1st Floor),  
Engineering Center (ECCR)

Organizers: **Lawrence Baggett**, University of Colorado, Boulder  
**Jerry Kaminker**, Indiana University-Purdue University Indianapolis  
**Judith Packer**, University of Colorado, Boulder

- 9:00AM *A KK-theoretic approach to the groupoid index*  
(6) *theorem*. Preliminary report.  
**Alan L Paterson**, University of Mississippi  
(989-19-33)
- 9:30AM *Extensions of Group Representations*. Preliminary  
(7) report.  
**Astrid an Huef**, University of New South Wales, **S Kaliszewski\***, Arizona State University, and **Iain Raeburn**, University of Newcastle (989-47-187)
- 10:00AM *k-Graphs, Coverings, and Coactions*. Preliminary  
(8) report.  
**David Pask**, University of Newcastle, **John Quigg\***, Arizona State University, and **Iain Raeburn**, University of Newcastle (989-46-177)
- 10:30AM *Lifting groups of automorphisms from the K-theory*  
(9) *of a UCT-Kirchberg algebra*. Preliminary report.  
**Jack Spielberg**, Arizona State University  
(989-46-181)

found in Volume 24, Issue 4 of *Abstracts of papers presented to the American Mathematical Society*, ordered according to the numbers in parentheses following the listings. The middle two digits, e.g., 897-20-1136, refer to the Mathematical Reviews subject classification assigned by the individual author. Groups of papers for each subject are listed chronologically in the *Abstracts*. The last one to four digits, e.g., 897-20-1136, refer to the receipt number of the abstract; abstracts are further sorted by the receipt number within each classification.

**Special Session on Noncommutative Geometry and Geometric Analysis, I**

- 9:00 AM – 10:45 AM **Room 139 (1st Floor), Engineering Center (ECCR)**
- Organizers: **Carla Farsi**, University of Colorado  
**Alexander Gorokhovsky**, University of Colorado  
**Siye Wu**, University of Colorado
- 9:00AM *On Positive Scalar Curvature.*  
 (10) **Paul Frank Baum**, Penn State University (989-53-43)
- 10:00AM *Strings, Fractal Membranes and Noncommutative Spacetimes.* Preliminary report.  
 (11) **Michel L. Lapidus**, University of California, Riverside (989-58-141)

**Special Session on Finite Geometries, I**

- 9:00 AM – 10:50 AM **Room 118 (1st Floor), Engineering Center (ECCR)**
- Organizers: **Stanley E. Payne**, University of Colorado Denver  
**Robert Allen Liebler**, Colorado State University
- 9:00AM *Multiple Nests.*  
 (12) **Norman L. Johnson**, University of Iowa (989-51-67)
- 9:30AM *Sharply and Super Sharply Focused Arcs in Desarguesian Planes.* Preliminary report.  
 (13) **William E Cherowitzo\***, University of Colorado at Denver, and **Leanne D Holder**, St. Mary's University (989-51-197)
- 10:00AM *Arcs and Ovals from Abelian Groups.*  
 (14) **Dina Ghinelli\***, Università di Roma "La Sapienza", **Dieter Jungnickel**, Universitaet Augsburg, and **Marialuisa de Resmini**, Università di Roma La Sapienza (989-52-188)
- 10:30AM *On  $(2n, 2, 2n, n)$  relative difference sets in non-solvable groups.*  
 (15) **Yutaka Hiramine**, Department of Mathematics, Faculty of Education, Kumamoto University (989-05-65)

**Special Session on Nonlinear Waves, I**

- 9:00 AM – 10:50 AM **Room 1B 55 (Basement), Engineering Center (ECCR)**
- Organizers: **Bernard Deconinck**, Colorado State University  
**Harvey Segur**, University of Colorado Boulder
- 9:00AM *Nonlinear fluid convection: from solitons to turbulence.*  
 (16) **Darryl D. Holm**, Los Alamos National Laboratory and Mathematics Department, Imperial College, London (989-35-203)
- 9:30AM *The modulation theory for the Camassa-Holm equation.*  
 (17) **T. Grava\***, SISSA, Italy, and **S. Abenda**, University of Bologna, Italy (989-35-217)
- 10:00AM *Extremal eigenvalue problems, nonlinear waves, and the Kuramoto-Sivashinky equation.*  
 (18) **J. C. Bronski**, University of Illinois, Urbana-Champaign (989-35-219)
- 10:30AM *Fermi surfaces and dynamical systems.*  
 (19) **S. P. Novikov**, University of Maryland and Landau Institute (989-35-220)

**Special Session on Computational and Mathematical Biology, I**

- 9:00 AM – 11:00 AM **Room 108 (1st Floor), Engineering Center (ECCR)**
- Organizer: **Harvey J. Greenberg**, University of Colorado at Denver
- 9:00AM *On Sausages, Steiner Trees, Proteins and Rho.*  
 ▶ (20) **J. MacGregor Smith**, University of Massachusetts (989-92-109)
- 10:00AM *Haplotyping and Minimum Diversity Graphs.*  
 ▶ (21) **Allen G Holder\***, Trinity University Mathematics, and **Courtney Davis**, University of Utah (989-90-73)
- 10:30AM Discussion

**Invited Address**

- 11:10 AM – NOON **Room 265 (2nd Floor), Engineering Center (ECCR)**
- (22) *Deviation of ergodic averages for rational polygonal billiards.*  
**Giovanni Forni**, Northwestern University

**Invited Address**

- 1:30 PM – 2:20 PM **Room 265 (2nd Floor), Engineering Center (ECCR)**
- (23) *Random matrix theory and the Riemann zeta-function*  
**J. Brian Conrey**, American Institute of Mathematics

**Special Session on Algebras, Lattices and Varieties, II**

- 2:30 PM – 4:50 PM **Room 151 (1st Floor), Engineering Center (ECCR)**
- Organizers: **Keith A. Kearnes**, University of Colorado, Boulder  
**Agnes Szendrei**, Bolyai Institute  
**Walter Taylor**, University of Colorado, Boulder
- 2:30PM *Concepts of universal algebras in logic.*  
 (24) **Chihiro Oshima**, Kawasaki, Japan (989-06-69)
- 3:00PM *Rigid homogeneous structures.*  
 (25) **W. Charles Holland**, Bowling Green State University (989-06-64)
- 4:00PM *Simple Moufang loops: recent results and open problems.*  
 (26) **Petr Vojtěchovský**, University of Denver (989-20-49)
- 4:30PM *Term finite principal congruences.* Preliminary report.  
 (27) **Ross Willard**, University of Waterloo (989-08-240)

**Special Session on Geometric Methods in Partial Differential Equations, II**

- 2:30 PM – 4:50 PM **Room 1B 40 (Basement), Engineering Center (ECCR)**
- Organizers: **Jeanne N. Clelland**, University of Colorado, Boulder  
**George R. Wilkins**, University of Hawaii
- 2:30PM *Second Order Families of Special Lagrangian 4-folds in  $\mathbb{C}^4$ .*  
 (28) **L. Marianty Ionel**, McMaster University (989-53-160)

- 3:30PM *Symbolic computation on a jet bundle. Moving coframes.* Preliminary report.  
 ▶ (29) **Irina A Kogan**, North Carolina State University (989-53-211)
- 4:00PM *The Path Geometry of Riemannian and Finsler geodesics on a Surface.* Preliminary report.  
 (30) **Christopher Catone**, University of Colorado (989-53-135)
- 4:30PM *Energy Critical Curves in the Path Space of the Euclidean Line.*  
 (31) **Marek Kossowski**, University of South Carolina, and **George R Wilkens\***, University of Hawaii at Manoa (989-58-266)

**Special Session on Groupoids in Analysis and Geometry, II**

2:30 PM – 4:50 PM **Room 133 (1st Floor), Engineering Center (ECCR)**

Organizers: **Lawrence Baggett**, University of Colorado, Boulder  
**Jerry Kaminker**, Indiana University-Purdue University Indianapolis  
**Judith Packer**, University of Colorado, Boulder

- 2:30PM *A loop groupoid action on systems of filters for non-MRA frame wavelets.* Preliminary report.  
 (32) **Lawrence Baggett**, University of Colorado, **Palle Jorgensen**, University of Iowa, **Kathy Merrill\***, Colorado College, and **Judith Packer**, University of Colorado (989-43-196)
- 3:00PM *Local index theory over foliation groupoids.*  
 (33) **Alexander Gorokhovsky\***, University of Colorado, and **John Lott**, University of Michigan (989-58-215)
- 3:30PM *C\*-algebras associated with interval maps.*  
 (34) **Valentin Deaconu**, Univ. of Nevada, Reno, and **Fred Shultz\***, Wellesley College (989-46-180)
- 4:00PM *C\*-algebras associated with topological relations.*  
 (35) **Berndt A. Brenken**, University of Calgary (989-46-134)
- 4:30PM *History of the Fourier Stieltjes Algebra of a Groupoid.* Preliminary report.  
 (36) **Martin E. Walter**, University of Colorado (989-01-270)

**Special Session on Noncommutative Geometry and Geometric Analysis, II**

2:30 PM – 4:55 PM **Room 139 (1st Floor), Engineering Center (ECCR)**

Organizers: **Carla Farsi**, University of Colorado  
**Alexander Gorokhovsky**, University of Colorado  
**Siye Wu**, University of Colorado

- 2:30PM *Asymptotically flat K-theory.* Preliminary report.  
 (37) **Jerome Kaminker**, IUPUI (989-19-209)
- 3:30PM *Fredholm indices of band-dominated operators.*  
 (38) **Vladimir Rabinovich**, IPN, Mexico, **Steffen Roch**, Univ. Darmstadt, Germany, and **John Roe\***, Penn State (989-47-77)
- 4:30PM *A sectional characterization of noncommutative CW-complexes.* Preliminary report.  
 (39) **Erich A McAlister**, University of Colorado (989-46-173)

**Special Session on Structured Population and Epidemic Models: Periodicity, Chaos, and Extinction, I**

2:30 PM – 3:50 PM **Room 116 (1st Floor), Engineering Center (ECCR)**

Organizers: **Linda J. S. Allen**, Texas Tech University  
**Sophia R.-J. Jang**, University of Louisiana at Lafayette

- 2:30PM *The impact of HIV infection on TB.*  
 (40) **Lih-Ing Wu Roeger\***, Texas Tech University, **Zhilan Feng**, Purdue University, and **Carlos Castillo-Chavez**, Cornell University (989-34-171)
- 3:00PM *A discrete, size-structured chemostat model with an inhibitor.*  
 (41) **Sophia R.-J. Jang**, University of Louisiana at Lafayette (989-92-172)
- 3:30PM *Stochastic Differential Equation Models for Epidemics with Multiple Pathogen Strains.*  
 ▶ (42) **Linda J. S. Allen\*** and **Nadarajah Kirupaharan**, Texas Tech University (989-92-97)

**Special Session on Graphs and Digraphs, I**

2:30 PM – 4:50 PM **Room 131 (1st Floor), Engineering Center (ECCR)**

Organizers: **Michael Jacobson**, University of Colorado, Denver  
**Richard J. Lundgren**, University of Colorado, Denver

- 2:30PM *Cycle Extendabilities for Special Graphs.* Preliminary report.  
 ▶ (43) **Guantao Chen\***, Georgia State University, **Ralphs J Faudree**, University of Memphis, **Ronald J Gould**, Emory University, and **Michael S Jacobson**, University of Colorado at Denver (989-05-68)
- 3:00PM *Forbidden Subgraphs That Imply 2-Factors With A Specified Number of Components.*  
 (44) **Jill Faudree**, University of Alaska - Fairbanks, and **Ralph Faudree\***, University of Memphis (989-05-82)
- 4:00PM *Dirac and Ore Type Results for Tournaments.*  
 ▶ (45) **Arthur H Busch\*** and **Michael S Jacobson**, University of Colorado at Denver (989-05-268)
- 4:30PM *Equivalence relations on colored digraphs.*  
 (46) **Bryan L. Shader**, University of Wyoming (989-05-96)

**Special Session on Finite Geometries, II**

2:30 PM – 4:20 PM **Room 118 (1st Floor), Engineering Center (ECCR)**

Organizers: **Stanley E. Payne**, University of Colorado Denver  
**Robert Allen Liebler**, Colorado State University

- 2:30PM *Blocking sets of external lines to a conic in PG(2,q).*  
 (47) **Gabor Korchmaros**, Mathematics Department University of Basilicata, Italy (989-51-92)
- 3:00PM *On the existence of certain generalized quadrangles.*  
 (48) **Vasyl Dmytrenko** and **Felix Lazebnik\***, Department of Mathematical Sciences (989-05-210)
- 3:30PM *Dimensional dual hyperovals associated with Steiner systems.* Preliminary report.  
 (49) **Satoshi Yoshiara\***, Tokyo Woman's Christian University, and **Alberto del Fra**, University of Rome (989-51-57)

- 4:00PM *When is  $\Delta_2^+(p)$  a subspace?* Preliminary report.  
 ▶ (50) **Ernest E. Shult**, Kansas State University  
 (989-51-243)

**Special Session on Nonlinear Waves, II**

2:30 PM – 4:50 PM **Room 1B 55 (Basement),  
 Engineering Center (ECCR)**

Organizers: **Bernard Deconinck**, Colorado State University  
**Harvey Segur**, University of Colorado Boulder

- 2:30PM *Extreme Nonlinear Optics (1)*.  
 (51) **H. Kapteyn\*** and **M. Murnane**, University of Colorado, Boulder (989-35-221)
- 3:00PM *Extreme Nonlinear Optics (2)*.  
 (52) **M. Murnane\*** and **H. Kapteyn**, University of Colorado, Boulder (989-35-222)
- 3:30PM *Two-Dimensional Solitons in Optically Modulated Waveguide Arrays: An Optical Analog of Bose-Einstein Condensation*.  
 (53) **M. J. Ablowitz**, **K. Julien\*** and **Z. H. Musslimani**, University of Colorado, Boulder (989-35-223)
- 4:00PM *Multidimensional solitons in a low-dimensional periodic potential*.  
 (54) **B. A. Malomed**, Tel Aviv University, Israel (989-35-228)
- 4:30PM *Analysis of spectral stability for vortices in nonlinear Schrödinger equations*.  
 (55) **R. L. Pego**, University of Maryland (989-35-230)

**Special Session on Computational and Mathematical Biology, II**

2:30 PM – 4:50 PM **Room 108 (1st Floor),  
 Engineering Center (ECCR)**

Organizer: **Harvey J. Greenberg**, University of Colorado at Denver

- 2:30PM *Genomes to Life: An Opportunity for Mathematics to Advance Biology*.  
 ▶ (56) **Gary M Johnson**, Office of Science, DOE (989-92-86)
- 3:20PM *Using graph extended-degree sequence to characterize molecular graphs and biological networks*.  
 (57) **Jean-Loup Faulon\*** and **Shawn Martin**, Sandia National Laboratories (989-92-70)
- 4:10PM *Prediction of protein function and pathway at the genome scale: from noisy data to biological knowledge*.  
 (58) **Dong Xu\***, **Trupti S Joshi**, University of Missouri-Columbia, and **Yu Chen**, University of Missouri-Columbia / University of Te (989-92-66)

**Invited Address**

5:10 PM – 6:00 PM **Room 265 (2nd Floor),  
 Engineering Center (ECCR)**

- (59) *Nonsmooth calculus*.  
**Juha M. Heinonen**, University of Michigan

# Friday, October 3

**Meeting Registration**

8:00 AM – 4:00 PM **Lobby, Mathematics Building**

**AMS Exhibit and Book Sale**

8:00 AM – 4:00 PM **Lobby, Mathematics Building**

**Special Session on Graphs and Diagraphs, II**

8:30 AM – 10:50 AM **Room 131 (1st Floor),  
 Engineering Center (ECCR)**

Organizers: **Michael Jacobson**, University of Colorado, Denver  
**Richard J. Lundgren**, University of Colorado, Denver

- 8:30AM *On bar-visibility graphs*. Preliminary report.  
 (60) **Joan P Hutchinson**, Macalester College (989-05-129)
- 9:00AM *On unit bar-visibility graphs*. Preliminary report.  
 (61) **Alice M Dean**, Skidmore College, **Ellen Gethner\***, University of Colorado at Denver, and **Joan P Hutchinson**, Macalester College (989-05-130)
- 9:30AM *Several Characterizations for Unit Interval Bigraphs*.  
 (62) **David E. Brown\*** and **Richard Lundgren**, University of Colorado at Denver (989-05-156)
- 10:00AM *Interval k-graphs and related partial orders*.  
 ▶ (63) Preliminary report.  
**Stephen Carl Flink**, University of Colorado at Denver (989-05-227)
- 10:30AM *Quadrangular Tournaments and Orthogonal Matrices*.  
 (64) **Dustin J. Stewart**, University of Colorado at Denver (989-05-225)

**Special Session on Algebraic Geometry, I**

8:30 AM – 10:50 AM **Room 155 (1st Floor),  
 Engineering Center (ECCR)**

Organizers: **Holger Kley**, Colorado State University  
**Rick Miranda**, Colorado State University  
**Chris Peterson**, Colorado State University

- 8:30AM *Extensions and Rank-2 Vector Bundles on Irreducible Nodal Curves*. Preliminary report.  
 (65) **Daniele Arcara**, University of Utah (989-14-251)
- 9:00AM *New bounds on Seshadri constants and nef divisors*.  
 (66) Preliminary report.  
**Brian Harbourne\***, University of Nebraska-Lincoln, and **Joaquim Roé**, Universitat Autònoma de Barcelona (989-14-83)
- 9:30AM *Multigraded Castelnuovo-Mumford Regularity*.  
 (67) **Diane Maclagan**, Stanford University (989-14-249)
- 10:00AM Discussion
- 10:30AM *Kaehler Solvmanifolds and a conjecture of Benson and Gordon*.  
 (68) **Donu Arapura**, Purdue University (989-32-167)

**Special Session on Algebras, Lattices and Varieties, III**

9:00 AM – 10:50 AM **Room 151 (1st Floor),  
Engineering Center (ECCR)**

Organizers: **Keith A. Kearnes**, University of Colorado, Boulder  
**Agnes Szendrei**, Bolyai Institute  
**Walter Taylor**, University of Colorado, Boulder

- 9:00AM *Congruence Lattices of Finite Algebras* Preliminary report. (69)  
**John W Snow**, Concordia University, Nebraska (989-08-36)
- 9:30AM *Homotopy groups of digraphs and NP-complete retraction problems.* (70)  
**Benoit Larose**, Concordia University, Montréal, Canada (989-06-29)
- 10:00AM Break
- 10:30AM *Whaley's Theorem for Finite Lattices.* (71)  
**Ralph Freese**, University of Hawaii, **Jennifer Hyndman\***, University of Northern British Columbia, and **J B Nation**, University of Hawaii (989-06-45)

**Special Session on Applications of Number Theory and Algebraic Geometry to Coding, I**

9:00 AM – 10:50 AM **Room 200 (2nd Floor),  
Engineering Center (ECCR)**

Organizers: **David R. Grant**, University of Colorado, Boulder  
**Jose Felipe Voloch**, University of Texas at Austin  
**Judy Leavitt Walker**, University of Nebraska, Lincoln

- 9:00AM *Cyclic caps of more than  $3q^2$  points in  $AG(4, q)$  in characteristic 2..* (72)  
► **Juergen Bierbrauer**, Michigan Technological University (989-51-148)
- 9:30AM *Algebraic Constructions of Low-Density Parity Check Codes.* (73)  
**Matthew T Koetz**, University of Nebraska, Lincoln (989-11-164)
- 10:00AM *Applications of Algebraic Number Theory in Multi-antenna Wireless Communications.* (74)  
**Pranav Dayal\*** and **Mahesh K Varanasi**, University of Colorado, Boulder. (989-94-259)
- 10:30AM *On Space-Time Coding and the Diophantine Approximation Theory.* (75)  
**Hesham El Gamal\***, The Ohio State University, and **Mohamed Oussama Damen**, University of Alberta (989-11-256)

**Special Session on Geometric Methods in Partial Differential Equations, III**

9:00 AM – 10:50 AM **Room 1B 40 (Basement),  
Engineering Center (ECCR)**

Organizers: **Jeanne N. Clelland**, University of Colorado, Boulder  
**George R. Wilkins**, University of Hawaii

- 9:00AM *The Inverse Problem of Lagrangian Mechanics for the Canonical Lie Group Spray.* (76)  
► **Gerard Thompson\***, University of Toledo, and **Ryad A Ghanam**, University of Pittsburgh at Greensburg (989-53-245)

- 10:00AM *Some general observations regarding symmetry reduction of EDS.* Preliminary report. (77)  
**Ian M Anderson**, Utah State University (989-53-226)

**Special Session on Groupoids in Analysis and Geometry, III**

9:00 AM – 10:50 AM **Room 133 (1st Floor),  
Engineering Center (ECCR)**

Organizers: **Lawrence Baggett**, University of Colorado, Boulder  
**Jerry Kaminker**, Indiana University-Purdue University Indianapolis  
**Judith Packer**, University of Colorado, Boulder

- 9:00AM *Fell Bundles and Groupoid Quantization.* Preliminary report. (78)  
**Birant Ramazan**, University of Nevada Reno (989-81-267)
- 9:30AM *Essentially trivial equivalence relations.* Preliminary report. (79)  
**Raymond Fabec**, Department of Mathematics, Louisiana State University, Baton Rouge (989-20-115)
- 10:00AM *On the cyclic cohomology of extended Hopf algebras.* (80)  
**Masoud Khalkhali**, University of Western Ontario (989-19-133)
- 10:30AM *The universal cover of a higher rank graph.* Preliminary report. (81)  
**Alex Kumjian**, University of Nevada, Reno (989-46-194)

**Special Session on Noncommutative Geometry and Geometric Analysis, III**

9:00 AM – 10:45 AM **Room 139 (1st Floor),  
Engineering Center (ECCR)**

Organizers: **Carla Farsi**, University of Colorado  
**Alexander Gorokhovsky**, University of Colorado  
**Siye Wu**, University of Colorado

- 9:00AM *Positive Mass Theorem and Stability of Manifolds with Parallel Spinors.* Preliminary report. (82)  
**Xianzhe Dai\***, UCSB, **Xiaodong Wang**, MIT, and **Guofang Wei**, UCSB (989-58-174)
- 10:00AM *Noncommutative geometry of limit sets.* (83)  
**John W Lott**, University of Michigan (989-58-85)

**Special Session on Homotopy Theory, I**

9:00 AM – 10:50 AM **Room 105 (1st Floor),  
Engineering Center (ECCR)**

Organizers: **Daniel Dugger**, University of Oregon  
**Brooke E. Shipley**, Purdue University

- 9:00AM Break
- 9:30AM *Knot theory through induced maps on configuration spaces.* (84)  
**Dev P. Sinha**, University of Oregon (989-57-157)
- 10:30AM *Simplicial groups modelling Algebraic K-theory.* (85)  
**Jeanne Duflot**, Colorado State University (989-19-149)

**Special Session on Structured Population and Epidemic Models: Periodicity, Chaos, and Extinction, II**

9:00 AM – 10:50 AM Room 116 (1st Floor), Engineering Center (ECCR)

Organizers: **Linda J. S. Allen**, Texas Tech University  
**Sophia R.-J. Jang**, University of Louisiana at Lafayette

- 9:00AM *Synchronous Oscillations and a Route to Chaos in the LPA Model*. Preliminary report.  
▶ (86) **Jim Cushing**, University of Arizona (989-92-99)
- 9:30AM *Predicting Irregularities in Population Cycles*. Preliminary report.  
▶ (87) **Shandelle M. Henson**, Andrews University (989-92-106)
- 10:00AM *Extinction Effect of Parasites on Host Populations*.  
▶ (88) **Yang Kuang**, Arizona State University (989-92-91)
- 10:30AM *Disease induced oscillations between two competing species*.  
▶ (89) **Pauline van den Driessche**, University of Victoria, and **Mary Lou Zeeman\***, University of Texas at San Antonio (989-92-199)

**Special Session on Associative Rings and their Modules, I**

9:00 AM – 10:50 AM Room 137 (1st Floor), Engineering Center (ECCR)

Organizers: **Gene Abrams**, University of Colorado at Colorado Springs  
**Kent Fuller**, University of Iowa

- 9:00AM *On Mueller's question*. Preliminary report.  
▶ (90) **P N Anh\***, Rényi Institute, Hungary, and **D Herbera**, Universidad Autonoma de Barcelona, Spain (989-16-131)
- 9:30AM *Actions of finite groups on smooth projective schemes*. Preliminary report.  
(91) **Frauke M. Bleher\***, University of Iowa, and **Ted Chinburg**, University of Pennsylvania (989-16-119)
- 10:00AM *Ring epimorphisms and  $C(X)$* .  
(92) **Michael Barr**, McGill University, **W.D. Burgess\***, University of Ottawa, and **R. Raphael**, Concordia University (989-13-79)
- 10:30AM *Linear Compactness in Cotilting Dualities*.  
(93) **Riccardo Colpi**, Dept. of Mathematics, University of Padova, ITALY (989-16-75)

**Special Session on Analysis on Singular Spaces, I**

9:00 AM – 10:50 AM Room 1B 51 (Basement), Engineering Center (ECCR)

Organizers: **Mario Bonk**, University of Michigan  
**Juha Heinonen**, Mathematical Sciences Research Institute

- 9:00AM *Lagrangian integral currents and geometry of singular spaces*. Preliminary report.  
(94) **Joseph HG Fu**, University of Georgia (989-53-265)
- 9:30AM *The impossibility of dimension reduction in  $L_1$* .  
(95) **James R Lee**, UC Berkeley, and **Assaf Naor\***, Microsoft Research (989-52-71)
- 10:00AM *Minimal volume Alexandrov spaces*.  
(96) **Peter A. Storm**, University of Chicago (989-53-107)
- 10:30AM *Conformal deformations and volume growth*.  
(97) **David A Herron**, University of Cincinnati (989-30-117)

**Special Session on Finite Geometries, III**

9:00 AM – 10:50 AM Room 118 (1st Floor), Engineering Center (ECCR)

Organizers: **Stanley E. Payne**, University of Colorado Denver  
**Robert Allen Liebler**, Colorado State University

- 9:00AM *Eggs in  $PG(4n - 1, q)$ ,  $q$  even, containing a pseudo pointed conic*.  
(98) **Matthew R Brown\***, University of Adelaide, Australia, and **Michel Lavrauw**, Università degli studi di Napoli Federico II (989-51-204)
- 9:30AM *Generalized quadrangles and their analogues via coherent configurations*. Preliminary report.  
(99) **Mikhail H. Klin\***, University of Delaware, Newark and Ben-Gurion University of the Negev, Beer Sheva, and **Sven Reichard**, University of Delaware, Newark (989-05-212)
- 10:00AM *Elation Points in Generalized Quadrangles*.  
(100) **Koen J. R. Thas**, Ghent University (989-51-126)
- 10:30AM *Characterizations of finite translation generalized quadrangles*. Preliminary report.  
(101) **Joseph A Thas**, Ghent University (Belgium) (989-51-125)

**Special Session on Nonlinear Waves, III**

9:00 AM – 10:50 AM Room 1B 55 (Basement), Engineering Center (ECCR)

Organizers: **Bernard Deconinck**, Colorado State University  
**Harvey Segur**, University of Colorado Boulder

- 9:00AM *Poisson brackets on meromorphic functions on hyperelliptic Riemann surfaces and 1D integrable hierarchies*.  
(102) **K. Vaninsky**, Michigan State University (989-34-231)
- 9:30AM *A generalized Dirichlet to Neumann map for integrable evolution equations*.  
(103) **B. Pelloni**, Reading University, UK (989-35-233)
- 10:00AM *Resonant solutions of the KP equation and the Toda lattice hierarchy*.  
(104) **G. Biondini**, Ohio State University (989-35-232)

**Special Session on Ubiquitous Heat Kernel, I**

9:00 AM – 10:25 AM Room 150 (1st Floor), Engineering Center (ECCR)

Organizers: **Jay Jorgenson**, City College of New York  
**Lynne Walling**, University of Colorado Boulder

- 9:00AM *Archimedean height pairing*.  
(105) **Bin Wang**, University of Colorado, Boulder (989-14-154)
- 9:30AM *Archimedean height pairings using heat kernels*.  
(106) **Bruno Harris**, Brown University (989-14-184)
- 10:00AM *Heat kernels and their role in trace formulas*.  
(107) **Jay Jorgenson**, The City College of New York (989-11-183)

**Special Session on Computational Number Theory, I**

9:00 AM – 10:50 AM **Room 265 (2nd Floor),  
Engineering Center (ECCR)**

Organizers: **Brian Conrey**, American Institute of Mathematics  
**Michael Rubinstein**, American Institute of Mathematics

- 9:00AM *The Basis Problem and associated algorithms.*  
(108) **Thomas R Shemanske**, Dartmouth College (989-11-61)
- 9:30AM *The Basis Problem and Associated Algorithms.*  
(109) **Arnold K Pizer**, University of Rochester (989-11-62)
- 10:00AM *L-Series and Modular Forms of Half-Integral Weight.*  
(110) Preliminary report.  
**Holly J Rosson**, Saint Mary's College of Maryland (989-11-176)
- 10:30AM *Central values of twisted L-functions.*  
(111) **Zhengyu Mao**, Rutgers University Newark (989-11-56)

**Special Session on Computational and Mathematical Biology, III**

9:00 AM – 10:45 AM **Room 108 (1st Floor),  
Engineering Center (ECCR)**

Organizer: **Harvey J. Greenberg**, University of Colorado at Denver

- 9:00AM *A graph-theoretic approach to separation of y- and b-ions from tandem mass spectrometry data and applications to de novo sequencing.* Preliminary report.  
(112) **Chongle Pan**, University of Tennessee, **Bo Yan**, **Victor Olman** and **Ying Xu\***, Oak Ridge National Laboratory (989-68-80)
- 10:00AM *The Topology of DNA.*  
▶ (113) **De Witt L Sumners**, Florida State University (989-92-27)

**Invited Address**

11:10 AM – NOON **Room 265 (2nd Floor),  
Engineering Center (ECCR)**

- ▶ (114) *Recent progress in time-frequency analysis.*  
**Joseph D Lakey**, New Mexico State University (989-42-09)

**Invited Address**

1:30 PM – 2:20 PM **Room 265 (2nd Floor),  
Engineering Center (ECCR)**

- (115) *Rings up to homotopy.*  
**Brooke Shipley**, Purdue University (989-55-52)

**Special Session on Algebras, Lattices and Varieties, IV**

2:30 PM – 4:50 PM **Room 151 (1st Floor),  
Engineering Center (ECCR)**

Organizers: **Keith A. Kearnes**, University of Colorado, Boulder  
**Agnes Szendrei**, Bolyai Institute  
**Walter Taylor**, University of Colorado, Boulder

- 2:30PM *Quasivarieties of commutative binary modes.*  
(116) Preliminary report.  
**Anna B Romanowska\*** and **K Matczak**, Warsaw University of Technology, Warsaw, Poland (989-08-15)
- 3:00PM *The Dilworth Theorem on embedding lattices into uniquely complemented lattices.*  
(117) **George Gratzer\*** and **Harry Lakser**, University of Manitoba (989-06-08)
- 4:00PM *Ordered and quasi ordered sets associated with transformation semigroups.* Preliminary report.  
▶ (118) **Boris M Schein**, University of Arkansas (989-06-21)
- 4:30PM *Dualities for double quasioperator algebras.*  
(119) Preliminary report.  
**M Gehrke\***, New Mexico State University, and **H A Priestley**, Oxford University (989-06-24)

**Special Session on Applications of Number Theory and Algebraic Geometry to Coding, II**

2:30 PM – 4:50 PM **Room 200 (2nd Floor),  
Engineering Center (ECCR)**

Organizers: **David R. Grant**, University of Colorado, Boulder  
**Jose Felipe Voloch**, University of Texas at Austin  
**Judy Leavitt Walker**, University of Nebraska, Lincoln

- 2:30PM *Minimal Degree Liftings of Hyperelliptic Curves.*  
(120) Preliminary report.  
**Luis R Finotti**, University of California Santa Barbara (989-11-100)
- 3:00PM *Weierstrass semigroups and codes from a class of maximal non-classical curves.*  
(121) **Gretchen L. Matthews**, Clemson University (989-14-162)
- 3:30PM *An Improvement of the Feng-Rao Bound on Minimum Distance.* Preliminary report.  
(122) **Diana Dunn**, University of Arkansas, **Sarah B. Graham**, Clemson University, and **Gary Salazar\***, Trinity University (989-14-161)
- 4:00PM Discussion
- 4:30PM *Algebraic Geometric Codes on Low Rank Surfaces.*  
(123) Preliminary report.  
**Marcos A Zarzar**, University of Texas at Austin (989-11-179)

**Special Session on Geometric Methods in Partial Differential Equations, IV**

2:30 PM – 4:50 PM **Room 1B 40 (Basement),  
Engineering Center (ECCR)**

Organizers: **Jeanne N. Clelland**, University of Colorado, Boulder  
**George R. Wilkins**, University of Hawaii

- 2:30PM *Self-dual SU(2) connections, and flows of metrics on  $M^3$ .* Preliminary report.  
(124) **Volodya Itskov**, Duke University (989-53-258)
- 3:30PM *Sub-Finsler Geometry in Dimension Three.*  
(125) Preliminary report.  
**Jeanne N Clelland**, University of Colorado at Boulder, and **Christopher G Moseley\***, United States Military Academy (989-53-198)
- 4:00PM *Generalized Symmetries of Darboux Integrable Equations.* Preliminary report.  
(126) **Matt Biesecker**, South Dakota State University (989-35-238)

4:30PM *Darboux Integrability and Backlund Equivalence for Hyperbolic Exterior Differential Systems.*  
(127) **Thomas A Ivey**, College of Charleston (989-35-151)

**Special Session on Groupoids in Analysis and Geometry, IV**

2:30 PM – 4:50 PM **Room 133 (1st Floor), Engineering Center (ECCR)**

Organizers: **Lawrence Baggett**, University of Colorado, Boulder  
**Jerry Kaminker**, Indiana University-Purdue University Indianapolis  
**Judith Packer**, University of Colorado, Boulder

2:30PM *The Dixmier-Douady class of groupoid crossed products.*  
(128) **Paul S Muhly**, The University of Iowa, and **Dana P Williams\***, Dartmouth College (989-46-39)

3:00PM *C\*-algebras of commuting endomorphisms.*  
(129) Preliminary report.  
**Valentin Deaconu**, University of Nevada, Reno (989-46-189)

3:30PM *Actions and Coactions for groupoids.* Preliminary report.  
(130) **Karla J. Oty\***, Colorado State University- Pueblo, and **Arlan Ramsay**, University of Colorado, Boulder (989-20-94)

4:00PM *Actions and Coactions for Groupoids, II.* Preliminary report.  
(131) **Arlan Ramsay\***, University of Colorado, and **Karla J. Oty**, Colorado State University - Pueblo (989-20-95)

4:30PM *Boundaries of generalized Baumslag-Solitar groups.* Preliminary report.  
(132) **Jerome Kaminker**, IUPUI (989-46-208)

**Special Session on Noncommutative Geometry and Geometric Analysis, IV**

2:30 PM – 4:25 PM **Room 139 (1st Floor), Engineering Center (ECCR)**

Organizers: **Carla Farsi**, University of Colorado  
**Alexander Gorokhovsky**, University of Colorado  
**Siye Wu**, University of Colorado

2:30PM *Projective multi-resolution analyses for  $L^2(\mathbb{R}^n)$ .*  
(133) **Judith A. Packer**, University of Colorado at Boulder (989-46-260)

3:30PM *Gauss-Bonnet and Poincaré-Hopf Theorems for Orbifolds with Boundary.* Preliminary report.  
(134) **Christopher W Seaton**, University of Colorado (989-53-110)

4:00PM *Geometric Quantization, Parallel Transport and the Fourier Transform.*  
(135) **William D Kirwin**, University of Colorado (989-53-269)

**Special Session on Homotopy Theory, II**

2:30 PM – 4:45 PM **Room 105 (1st Floor), Engineering Center (ECCR)**

Organizers: **Daniel Dugger**, University of Oregon  
**Brooke E. Shipley**, Purdue University

2:30PM Break

3:00PM *Loop spaces via algebraic theories.* Preliminary report.  
(136) **Bernard Badzioch\***, **Kuerak Chung** and **Alexander A. Voronov**, University of Minnesota (989-55-214)

3:30PM *Little cubes and long knots.* Preliminary report.  
(137) **Ryan D Budney**, University of Rochester (989-00-155)

4:00PM *Sq<sup>0</sup> and the Adams E<sub>2</sub>-term.*  
(138) **John H Palmieri**, University of Washington (989-55-178)

**Special Session on Structured Population and Epidemic Models: Periodicity, Chaos, and Extinction, III**

2:30 PM – 4:20 PM **Room 116 (1st Floor), Engineering Center (ECCR)**

Organizers: **Linda J. S. Allen**, Texas Tech University  
**Sophia R.-J. Jang**, University of Louisiana at Lafayette

2:30PM *Competitive Exclusion and Coexistence Results for a Nonlinear Size-Structured Population Model.*  
(139) **Azmy S Ackleh\***, University of Louisiana at Lafayette, and **Keng Deng**, University of Louisiana at Lafayette (989-92-88)

3:00PM *Age-Hierarchical Competitions and the Effects of Dispersion.* Preliminary report.  
(140) **K. W. Blayneh**, Florida A&M University (989-92-137)

3:30PM *Effects of host chronic-age structure on the dynamics of infectious diseases.*  
▶ (141) **Maia Martcheva\***, University of Florida, and **Carlos Castillo-Chavez**, Cornell University (989-92-98)

4:00PM *The most basic stage-structured population model with density-dependent per capita transition rate.*  
(142) **Horst R Thieme**, Arizona State University (989-92-78)

**Special Session on Graphs and Diagraphs, III**

2:30 PM – 4:50 PM **Room 131 (1st Floor), Engineering Center (ECCR)**

Organizers: **Michael Jacobson**, University of Colorado, Denver  
**Richard J. Lundgren**, University of Colorado, Denver

2:30PM *On graph irregularity strength.*  
(143) **A. Frieze**, Carnegie Mellon University, **R. Gould\***, **M. Karonski**, Emory University, and **F. Pfender**, Technical University of Berlin (989-05-55)

3:00PM *The pebbling threshold of squared cliques and a conjecture of Graham.*  
▶ (144) **Glenn H Hurlbert\***, Arizona State University, and **Airat Bekmetjev**, Hope College (989-05-50)

3:30PM *Chessboard Problems.* Preliminary report.  
▶ (145) **John J Watkins**, Colorado College (989-05-74)

4:00PM *A bound on the total size of a cutcover.*  
(146) **Andre Kundgen\*** and **Megan Spangler**, Cal State San Marcos (989-05-147)

4:30PM *Covering Euclidean n-space by translates of a convex body.*  
(147) **Zoltan Furedi**, University of Illinois at Urbana-Champaign, and Hungarian Academy of Sciences, and **Jeong-Hyun Kang\***, University of Illinois at Urbana-Champaign (989-05-200)



**Special Session on Associative Rings and their Modules, II**

2:30 PM – 4:50 PM **Room 137 (1st Floor), Engineering Center (ECCR)**

Organizers: **Gene Abrams**, University of Colorado at Colorado Springs  
**Kent Fuller**, University of Iowa

- 2:30PM *Zero Divisor Graphs*. Preliminary report.  
▶ (148) **Frank DeMeyer\***, Colorado state University, and **Lisa DeMeyer**, Central Michigan University (989-13-40)
- 3:00PM *Quivers of Locally Artinian Rings*. Preliminary report. (149)  
**Jennifer A. Firkins Nordstrom**, Linfield College (989-16-132)
- 3:30PM *n-Cotilting and n-Tilting Modules over Ring Extensions*. Preliminary report. (150)  
**Alberto Tonolo**, University of Padova, Italy (989-18-81)
- 4:00PM *Quasi-Koszul Algebras*. Preliminary report. (151)  
**Yuriy Drozd**, Kyiv Taras Shevchenko University, and **Edward L Green\***, Virginia Tech (989-16-108)
- 4:30PM *Stacks of finite dimensional algebras and their homology*. (152)  
**Nancy Heinschel and Birge Huisgen-Zimmermann\***, University of California at Santa Barbara (989-16-122)

**Special Session on Analysis on Singular Spaces, II**

2:30 PM – 4:50 PM **Room 1B 51 (Basement), Engineering Center (ECCR)**

Organizers: **Mario Bonk**, University of Michigan  
**Juha Heinonen**, Mathematical Sciences Research Institute

- 2:30PM *A lemma on the higher integrability of functions and its applications*. (153)  
**Xiao Zhong**, Department of Mathematics and Statistics, University of Jyväskylä (989-49-114)
- 3:00PM *Size of Fatou Sets for Bounded p-Harmonic Functions in the Half Plane (joint work with R. Kaufman)*. Preliminary report. (154)  
**Jang-Mei Wu\*** and **Robert Kaufman**, University of Illinois (989-31-143)
- 3:30PM *Bilipschitz Embeddings of Metric Spaces in Euclidean Space*. Preliminary report. (155)  
**Conrad P Plaut**, University of Tennessee (989-53-237)
- 4:00PM *Hausdorff dimensions of Heisenberg fractals*. Preliminary report. (156)  
**Zoltan M Balogh, Regula Hofer-Isenegger**, University of Berne, and **Jeremy T Tyson\***, University of Illinois (989-28-239)
- 4:30PM *Mappings of finite distortion: The sharp modulus of continuity*. (157)  
**Jani Onninen\***, University of Michigan, and **Pekka Koskela**, University of Jyväskylä (989-30-252)

**Special Session on Algebraic Geometry, II**

2:30 PM – 4:50 PM **Room 155 (1st Floor), Engineering Center (ECCR)**

Organizers: **Holger Kley**, Colorado State University  
**Rick Miranda**, Colorado State University

**Chris Peterson**, Colorado State University

- 2:30PM *Degenerations of vector bundles on three space*. Preliminary report. (158)  
**A. Prabhakar Rao**, UM-St.Louis (989-14-242)
- 3:00PM Discussion
- 3:30PM *A rational surface of degree 12 in projective fourspace*. (159)  
**Hirotsuchi Abo**, Department of Mathematics, Colorado State University (989-14-190)
- 4:00PM *Families of degree two curves and certain ropes*. (160)  
**Uwe Nagel\***, University of Kentucky, **Roberto Notari** and **Maria L Spreafico**, Politecnico di Torino (989-14-216)
- 4:30PM *Linear series on a special rational surface*. (161)  
**Hal Schenck**, Texas A&M University (989-14-186)

**Special Session on Finite Geometries, IV**

2:30 PM – 4:50 PM **Room 118 (1st Floor), Engineering Center (ECCR)**

Organizers: **Stanley E. Payne**, University of Colorado Denver  
**Robert Allen Liebler**, Colorado State University

- 2:30PM *Odd order conjecture of translation planes*. Preliminary report. (162)  
**Chat Y. Ho**, University of Florida (989-20-60)
- 3:00PM *Construction of Some New Projective Planes*. Preliminary report. (163)  
**G Eric Moorhouse**, University of Wyoming (989-05-44)
- 3:30PM *The Classification of flag transitive planes of order 32*. (164)  
**Patrick S Fleming**, University of Wyoming (989-51-113)
- 4:00PM *Orbit Computation and Applications in Finite Geometry*. Preliminary report. (165)  
**Anton Betten**, Colorado State University (989-51-136)
- 4:30PM *Hemisystems of  $H(3, q^2)$* . (166)  
**Tim Penttila**, University of Western Australia (989-51-38)

**Special Session on Nonlinear Waves, IV**

2:30 PM – 4:50 PM **Room 1B 55 (Basement), Engineering Center (ECCR)**

Organizers: **Bernard Deconinck**, Colorado State University  
**Harvey Segur**, University of Colorado Boulder

- 2:30PM *Nonlinear dynamics with matter waves - experiments with Bose-Einstein condensates*. (167)  
**P. W. Engels**, University of Colorado, Boulder (989-35-234)
- 3:00PM *Turning fermions into bosons*. (168)  
**D. S. Jin**, University of Colorado, Boulder (989-35-235)
- 3:30PM *Nonlinear Waves in BEC: A Collection of Short Stories*. (169)  
**P. G. Kevrekidis**, University of Massachusetts (989-35-244)
- 4:00PM *Self-Trapping of Light in a Two-Dimensional Nonlinear Periodic Structure*. (170)  
**Z. Musslimani**, Central Florida University (989-35-246)

- 4:30PM *Dynamics of periodic multi-component Bose-Einstein condensates.*  
(171) **B. Deconinck**, University of Washington (989-35-247)

**Special Session on Ubiquitous Heat Kernel, II**

2:30 PM – 3:55 PM **Room 150 (1st Floor), Engineering Center (ECCR)**

Organizers: **Jay Jorgenson**, City College of New York  
**Lynne Walling**, University of Colorado Boulder

- 2:30PM *A heat kernel associated to Ramanujan's tau function.*  
(172) **Jeffrey Stopple**, Mathematics, UCSB (989-11-229)
- 3:00PM *Comparison of the Heat Kernel for Finite Graphs and that for Compact Riemann Surfaces.*  
(173) Preliminary report.  
**Audrey A. Terras**, Univ. of California at San Diego (989-11-207)
- 3:30PM *Kato's inequality for discrete magnetic Laplacians.*  
(174) Preliminary report.  
**J. Dodziuk\***, Queens College (CUNY), and **V. Mathai**, University of Adelaide (989-58-165)

**Special Session on Computational Number Theory, II**

2:30 PM – 5:00 PM **Room 265 (2nd Floor), Engineering Center (ECCR)**

Organizers: **Brian Conrey**, American Institute of Mathematics  
**Michael Rubinstein**, American Institute of Mathematics

- 2:30PM *Computing L-functions.*  
(175) **Michael Rubinstein**, University of Waterloo (989-11-253)
- 3:00PM *Maass forms and their L-functions.*  
▶ (176) **David W Farmer**, American Institute of Mathematics (989-11-241)
- 3:30PM Discussion

**Special Session on Computational and Mathematical Biology, IV**

2:30 PM – 4:50 PM **Room 108 (1st Floor), Engineering Center (ECCR)**

Organizer: **Harvey J. Greenberg**, University of Colorado at Denver

- 2:30PM *Finding the abundance of functional RNA molecules in the space of all possible sequences.*  
▶ (177) **Rob Knight**, MCD Biology, CU Boulder (989-92-90)
- 3:20PM *Searching for Sequence Motifs with Single Molecules.* Preliminary report.  
▶ (178) **Thomas T. Perkins**, CU Boulder-NIST (989-92-118)
- 4:10PM *A motor that makes its own track: helicase opening of DNA.*  
▶ (179) **M D Betterton**, University of Colorado at Boulder (989-92-145)

**Session for Contributed Papers**

2:30 PM – 3:55 PM **Room 110 (1st Floor), Engineering Center (ECCR)**

- 2:30PM *Conjugate Direction Methods in Linear Topological Spaces.* Preliminary report.  
(180) **Ivie Stein, Jr.**, The University of Toledo (989-65-153)
- 2:45PM *On the Direct Product of Measures and Applications.*  
(181) **Carmen Vlad**, Pace University (989-28-42)
- 3:00PM *The Hamming Distance between Two Uniform Set Systems.* Preliminary report.  
(182) **Junichiro Fukuyama, Dr.**, Indiana State University (989-05-20)
- 3:15PM *Optimality Condition In Optimization Network Tasks.*  
(183) **Seilkhan Boranbayev**, Milwaukee, WI (989-05-23)
- 3:30PM *Rational jet dependence of formal equivalences between real-analytic hypersurfaces in  $\mathbb{C}^2$ .*  
(184) **R. Travis Kowalski**, Colorado College (989-32-273)
- 3:45PM *Structure of associated prime ideals of differential operator rings.* Preliminary report.  
▶ (185) **Vijay Kumar Bhat, Dr.**, Banasthali VidyapithRajasthan-304022.India. (989-16-10)

**Erdős Memorial Lecture**

5:10 PM – 6:00 PM **Room A2B70, MCDB Biology**

- (186) *Some Insights of Computational Complexity Theory.*  
**Avi Wigderson**, Institute for Advanced Study

**Reception (Hosted by the Department of Mathematics)**

6:15 PM – 7:30 PM **Room 350, Mathematics Building**

**Saturday, October 4**

**Invited Address**

9:00 AM – 9:50 AM **Room 1B 40 (Basement), Engineering Center (ECCR)**

- (187) *Maximally supersymmetric gauge theories.*  
**Albert Schwarz**, University of California Davis

**Special Session on Graphs and Diagraphs, IV**

10:00 AM – 11:50 AM **Room 131 (1st Floor), Engineering Center (ECCR)**

Organizers: **Michael Jacobson**, University of Colorado, Denver  
**Richard J. Lundgren**, University of Colorado, Denver

- 10:00AM *Agreement Subtrees.* Preliminary report.  
(205) **William H.E. Day**, Port Maitland, Nova Scotia, and **F. R. McMorris\***, Illinois Institute of Technology (989-05-111)
- 10:30AM *Offensive Alliances in Directed Graphs.* Preliminary report.  
▶ (206) **Larry J Langley**, University of the Pacific (989-05-112)
- 11:00AM *Maximal Clique Partitions of Graphs.*  
(207) **Chariya Uyyasathian** and **Kathryn Fraughnaugh\***, University of Colorado at Denver (989-05-264)

11:30AM *On the asymptotics of the smallest eigenvalues of a  $k$ -regular graph.* Preliminary report.  
 ▶ (208) **Sebastian M Cioaba**, Queen's University (989-05-202)

***Special Session on Algebras, Lattices and Varieties, V***

10:00 AM – 12:20 PM **Room 151 (1st Floor), Engineering Center (ECCR)**

Organizers: **Keith A. Kearnes**, University of Colorado, Boulder  
**Agnes Szendrei**, Bolyai Institute  
**Walter Taylor**, University of Colorado, Boulder

10:00AM *Heyting Varieties and Priestley Configurations.* Preliminary report. (188)  
**R. Ball\***, University of Denver, **A. Pultr**, Charles University, and **J. Sichler**, University of Manitoba (989-06-17)

11:00AM *Sheaf Representations of Preprimal Varieties.* Preliminary report. (189)  
**Arthur Knoebel**, Vanderbilt University (989-08-16)

11:30AM *Products of quasigroup actions.* Preliminary report. (190)  
**Jonathan D.H. Smith**, Iowa State University (989-08-14)

NOON *Free algebra decomposition and inclusion-exclusion analysis.* Preliminary report. (191)  
**Joel D. Berman\*** and **W. J. Blok**, University of Illinois at Chicago (989-08-35)

***Special Session on Applications of Number Theory and Algebraic Geometry to Coding, III***

10:00 AM – 12:20 PM **Room 200 (2nd Floor), Engineering Center (ECCR)**

Organizers: **David R. Grant**, University of Colorado, Boulder  
**Jose Felipe Voloch**, University of Texas at Austin  
**Judy Leavitt Walker**, University of Nebraska, Lincoln

10:00AM *The distribution of class groups of function fields.* Preliminary report. (192)  
**Jeffrey D Achter**, Department of Mathematics, Columbia University (989-11-13)

10:30AM *The two-variable zeta function of a curve and algebraic-geometric codes.* (193)  
**Iwan M Duursma**, University of Illinois at Urbana-Champaign (989-11-127)

11:00AM *Modularity of Asymptotically Optimal Recursive Towers.* (194)  
**Wen-Ching Winnie Li**, Penn State University (989-14-87)

11:30AM *An application of Galois covers of the affine line to maximal curves.* (195)  
**Rachel J Pries**, Colorado State University (989-11-76)

NOON *Nonbinary Quantum Error-Correcting Codes from Algebraic Curves.* Preliminary report. (196)  
**Jon-Lark Kim\*** and **Judy L. Walker**, Department of Math, University of Nebraska-Lincoln (989-94-146)

***Special Session on Geometric Methods in Partial Differential Equations, V***

10:00 AM – 11:50 AM **Room 1B 40 (Basement), Engineering Center (ECCR)**

Organizers: **Jeanne N. Clelland**, University of Colorado, Boulder  
**George R. Wilkins**, University of Hawaii

10:00AM *On the two-phase Stefan problem.* Preliminary report. (197)  
**Marianne Korten\*** and **Charles N Moore**, Kansas State University (989-35-191)

11:00AM *Characterizing immersions that lie on algebraic varieties (Preliminary report).* Preliminary report. (198)  
**Steven V Wilkinson**, Northern Kentucky University (989-53-93)

11:30AM Discussion

***Special Session on Noncommutative Geometry and Geometric Analysis, V***

10:00 AM – 11:45 AM **Room 139 (1st Floor), Engineering Center (ECCR)**

Organizers: **Carla Farsi**, University of Colorado  
**Alexander Gorokhovsky**, University of Colorado  
**Siye Wu**, University of Colorado

10:00AM *Symplectic toric spaces with isolated singularities.* (199)  
**Eugene M Lerman**, University of Illinois, Urbana-Champaign (989-58-170)

11:00AM *Hopf-cyclic cohomology with coefficients.* (200)  
**Masoud Khalkhali**, Western Ontario (989-19-224)

***Special Session on Homotopy Theory, III***

10:00 AM – 12:15 PM **Room 105 (1st Floor), Engineering Center (ECCR)**

Organizers: **Daniel Dugger**, University of Oregon  
**Brooke E. Shipley**, Purdue University

10:00AM *Trace and Transfer Maps in the Algebraic K-theory of Spaces.* Preliminary report. (201)  
**Wojciech Dorabiala** and **Mark W Johnson\***, Penn State Altoona (989-19-201)

10:30AM *Controlled homotopy theory of simplicial sets.* (202)  
**Daniel C Isaksen**, Wayne State University (989-55-89)

11:00AM *Small object argument for classes.* Preliminary report. (203)  
**Boris Chorny**, University of Western Ontario (989-55-175)

11:30AM *Representations of profinite groups, representation varieties, and K-theory.* (204)  
**Gunnar Carlsson**, Stanford (989-19-272)

***Special Session on Associative Rings and their Modules, III***

10:00 AM – 12:20 PM **Room 137 (1st Floor), Engineering Center (ECCR)**

Organizers: **Gene Abrams**, University of Colorado at Colorado Springs  
**Kent Fuller**, University of Iowa

10:00AM *Complements to projective almost complete tilting modules.* (209)  
**Francesca Mantese**, University of Verona (989-16-58)

- 10:30AM *Fractional skew monoid rings.*  
(210) **P. Ara**, Universitat Autònoma de Barcelona, **M. A. González-Barroso**, Universidad de Cádiz, **K. R. Goodearl\***, University of California at Santa Barbara, and **E. Pardo**, Universidad de Cádiz (989-16-123)
- 11:00AM *Morphic Rings and Modules.*  
(211) **W K Nicholson\***, University of Calgary, and **E Sanchez Campos**, University of Malaga (989-16-30)
- 11:30AM *Two-sided Vector Spaces.*  
(212) **Adam Nyman\***, University of Montana, Missoula, and **Christopher J. Pappacena**, National Security Agency (989-16-218)
- NOON *Endomorphism Rings in Morita Contexts.*  
(213) **Pham Ngoc Anh**, Alfred Renyi Mathematical Institute, and **Michael F Siddoway\***, Colorado College (989-13-124)

**Special Session on Analysis on Singular Spaces, III**

- 10:00 AM – 12:20 PM **Room 1B 51 (Basement), Engineering Center (ECCR)**  
Organizers: **Mario Bonk**, University of Michigan  
**Juha Heinonen**, Mathematical Sciences Research Institute
- 10:00AM *EZ-structures and actions on  $\mathbb{D}^n$ .*  
(214) **Jean-Francois Lafont\*** and **F.T. Farrell**, S.U.N.Y. Binghamton (989-51-22)
- 10:30AM *Conjugating semigroups of holomorphic endomorphisms.*  
(215) **Sergiy Merenkov\***, University of Michigan, and **Gregery T Buzzard**, Purdue University (989-32-104)
- 11:00AM *On the Lipschitz regularity of 2-harmonic functions in metric spaces.*  
(216) **Nageswari Shanmugalingam\***, University of Cincinnati, **Pekka Koskela** and **Kai Rajala**, University of Jyväskylä (989-31-128)
- 11:30AM *Quasisymmetric Embedding of Self Similar Surfaces.*  
(217) **Daniel Meyer**, University of Washington (989-30-205)
- NOON *Structure of exceptional sets and related problems of geometric measure theory.* Preliminary report.  
(218) **Giovanni Alberti**, University of Pisa, **Marianna Csörnyei\*** and **David Preiss**, University College London (989-28-271)

**Special Session on Algebraic Geometry, III**

- 10:00 AM – 12:20 PM **Room 155 (1st Floor), Engineering Center (ECCR)**  
Organizers: **Holger Kley**, Colorado State University  
**Rick Miranda**, Colorado State University  
**Chris Peterson**, Colorado State University
- 10:00AM *A geometric Littlewood-Richardson rule.*  
(219) **Ravi Vakil**, Stanford (989-14-206)
- 10:30AM *Incidence duality and Abel-Jacobian map.* Preliminary report.  
(220) **Bin Wang**, University of Colorado, Boulder (989-14-101)
- 11:00AM *Classification of Quadruple Galois Canonical covers.*  
(221) **Francisco J Gallego**, Universidad Complutense de Madrid, and **Bangere P Purnaprajna\***, University of Kansas (989-14-121)

- 11:30AM *Deformation of Galois covers in characteristic p.*  
(222) **Rachel J Pries**, Colorado State University (989-14-120)
- NOON *Three-folds with Nonconstant Regular Functions and Vanishing Hodge Cohomology.*  
(223) **Jing Zhang**, Department of Mathematics, Washington University, St.Louis, MO 63130 (989-14-274)

**Special Session on Finite Geometries, V**

- 10:00 AM – 11:50 AM **Room 118 (1st Floor), Engineering Center (ECCR)**  
Organizers: **Stanley E. Payne**, University of Colorado Denver  
**Robert Allen Liebler**, Colorado State University
- 10:00AM *Partial Ovoids and Spans of the Hermitian Surface.*  
(224) **G. L. Ebert**, University of Delaware (989-51-54)
- 10:30AM *Characterizing "Neoclassical" Unitals as Codewords.*  
(225) **Kenneth L Wantz\***, Southern Nazarene University, and **Ronald D Baker**, West Virginia State College (989-51-37)
- 11:00AM *The non-existence of ovoids in the dual polar space  $DW(6, q)$ .*  
(226) **Bruce N. Cooperstein\***, University of California, Santa Cruz, and **Antonio Pasini**, University of Siena (989-51-185)
- 11:30AM *Caps on a Hermitian variety.*  
(227) **James W Hirschfeld**, University of Sussex (989-51-48)

**Special Session on Nonlinear Waves, V**

- 10:00 AM – 12:20 PM **Room 1B 55 (Basement), Engineering Center (ECCR)**  
Organizers: **Bernard Deconinck**, Colorado State University  
**Harvey Segur**, University of Colorado Boulder
- 10:00AM *Stabilizing the Benjamin-Feir instability.*  
(228) **H. Segur**, University of Colorado, Boulder (989-35-248)
- 10:30AM *Continuous and Discrete Homotopy Operators with Applications in Integrability Testing.*  
(229) **W. Hereman**, Colorado School of Mines (989-35-250)
- 11:00AM *Lab Tours (0).*  
(230) **B. Deconinck\***, University of Washington, and **H. Segur**, University of Colorado, Boulder (989-35-261)
- 11:30AM *Lab Tours (1): Bose-Einstein condensates.*  
(231) **P. W. Engels**, University of Colorado, Boulder (989-35-262)
- NOON *Lab Tours (2).*  
(232) **H. Kapteyn\*** and **M. Murnane**, University of Colorado, Boulder (989-35-263)

**Special Session on Ubiquitous Heat Kernel, III**

- 10:00 AM – 11:25 AM **Room 150 (1st Floor), Engineering Center (ECCR)**  
Organizers: **Jay Jorgenson**, City College of New York  
**Lynne Walling**, University of Colorado Boulder

- 10:00AM *The use of the heat kernel in low-dimensional quantum gauge theory.* (233)  
**Dana Fine**, University of Massachusetts, Dartmouth (989-53-254)
- 10:30AM *Heat kernels in geometric evolution equations.* (234)  
 Preliminary report.  
**Joseph F Grotowski**, City College of New York, CUNY (989-53-193)
- 11:00AM *Geometric Models for a family of small representations.* Preliminary report.  
**L. I Barchini**, Oklahoma State University (989-43-150)

- 2:30PM *Minimum Homogeneous Weight of Trace Codes over Galois Rings.* Preliminary report.  
**Marcus Greferath\***, **Michael O'Sullivan** and **Roxana Smarandache**, San Diego State University (989-05-236)
- 3:00PM *A Unified Framework for Decoding "Ideal-based" Codes.* (244)  
**Venkatesan Guruswami**, University of Washington (989-68-166)
- 3:30PM *The minimum distance of some 2-D cyclic codes.* Preliminary report.  
**Robert F Lax**, LSU (989-94-32)
- 4:00PM *Convolutional codes with Maximum Distance Profile.* (246)  
**Roxana Smarandache\***, San Diego State University, **Heide Gluesing-Luerssen**, University of Oldenburg, **Ryan Hutchinson** and **Joachim Rosenthal**, University of Notre Dame (989-94-142)
- 4:30PM *An Essay on Equivalence of Linear Codes.* (247)  
**Jay A. Wood**, Western Michigan University (989-94-192)

**Special Session on Computational Number Theory, III**

10:00 AM – 12:50 PM **Room 245 (2nd Floor), Engineering Center (ECCR)**

Organizers: **Brian Conrey**, American Institute of Mathematics  
**Michael Rubinstein**, American Institute of Mathematics

- 10:00AM *High precision values of Stieltjes constants, Taylor coefficients, and fractional derivatives for the Riemann zeta function.* (236)  
**Rick Kreminski**, Texas A&M University - Commerce (989-11-26)
- 10:30AM *On the vanishing of cubic twists of elliptic curves.* (237)  
**Chantal David\***, **Hershy Kisilevsky** and **Jack Fearnley**, Concordia University (989-11-213)
- 11:00AM *Barnes integrals and archimedean L-factors.* (238)  
**Eric Stade**, University of Colorado at Boulder (989-11-163)
- 11:30AM *Rankin-Cohen type brackets for Siegel modular forms.* Preliminary report.  
**Olav K Richter\***, University of North Texas, and **Ozlem Imamoglu**, ETH Zurich (989-11-169)
- NOON *Almost all reductions of an elliptic curve have a large exponent.* (240)  
**William D Duke**, UCLA (989-11-159)
- 12:30PM *Constructing 1-Parameter Families of Elliptic Curves over  $\mathbb{Q}(t)$  with Moderate Rank.* Preliminary report.  
**Steven J Miller**, The Ohio State University (989-11-195)

**AMS Special Presentation**

10:00 AM – 1:00 PM **Room 265 (2nd Floor), Engineering Center (ECCR)**

*TA development using case studies: A workshop for faculty.*  
 Presenter: **Soloman Friedberg**, Boston College

**Special Session on Applications of Number Theory and Algebraic Geometry to Coding, IV**

2:00 PM – 4:50 PM **Room 200 (2nd Floor), Engineering Center (ECCR)**

Organizers: **David R. Grant**, University of Colorado, Boulder  
**Jose Felipe Voloch**, University of Texas at Austin  
**Judy Leavitt Walker**, University of Nebraska, Lincoln

- 2:00PM *Various results on finite fields with applications to codes.* Preliminary report.  
**Nigel Boston**, University of Wisconsin-Madison (989-11-182)

**Special Session on Associative Rings and their Modules, IV**

2:00 PM – 3:20 PM **Room 137 (1st Floor), Engineering Center (ECCR)**

Organizers: **Gene Abrams**, University of Colorado at Colorado Springs  
**Kent Fuller**, University of Iowa

- 2:00PM *Binomial Rings.* Preliminary report.  
**Jessica K. Sklar**, Pacific Lutheran University (989-16-152)
- 2:30PM *Rationality of the Poincare series for Koszul algebras.* (249)  
**Izuru Mori**, Syracuse University (989-16-28)
- 3:00PM *The Auslander-Reiten quiver of a selfinjective Koszul algebra.* (250)  
**Roberto Martinez-Villa**, UNAM-Morelia, and **Dan Zacharia\***, Syracuse University (989-16-144)

**Special Session on Homotopy Theory, IV**

2:30 PM – 4:15 PM **Room 105 (1st Floor), Engineering Center (ECCR)**

Organizers: **Daniel Dugger**, University of Oregon  
**Brooke E. Shipley**, Purdue University

- 2:30PM *Equivariant Formality.* (251)  
**Laura Scull**, University of British Columbia (989-55-63)
- 3:00PM *Composition of bilinear forms in characteristic p.* (252)  
**Daniel Dugger\***, University of Oregon, and **Daniel Isaksen**, Wayne State University (989-12-102)
- 3:30PM *The Multiplication on MU and BP.* Preliminary report.  
**Michael A Mandell**, University of Chicago (989-55-158)

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

**Michel L. Lapidus**  
 Associate Secretary  
 Riverside, California