
Program of the Sessions

Evanston, Illinois, October 23–24, 2004

Saturday, October 23

Meeting Registration

7:00 AM – 4:00 PM Lobby, Technological Institute

AMS Exhibit and Book Sale

7:00 AM – 4:00 PM Room L 150, Technological Institute

Special Session on Solving Polynomial Systems, I

8:00 AM – 11:20 AM Room G 43, Donald P. Jacobs Center

Organizers: **Anton Leykin**, University of Illinois at Chicago
Jan Verschelde, University of Illinois at Chicago

8:00AM *Homotopies to Compute Intersections of Solution Components of Polynomial Systems.*
(1) **Andrew J Sommese**, University of Notre Dame (1001-65-91)

8:30AM *Solving Polynomial Systems by Intersecting Subsystems Using Diagonal Homotopies.*
(2) Preliminary report.
Andrew J Sommese, University of Notre Dame, **Jan Verschelde**, University of Illinois at Chicago, and **Charles W Wampler***, General Motors R&D Center (1001-65-104)

9:00AM *Advantages of Parsing Polynomials into Straight-line Programs.* Preliminary report.
► (3) **Daniel J Bates**, University of Notre Dame (1001-68-243)

9:30AM Break

10:00AM *Is the attained solution isolated?* Preliminary report.
(4) **Tien-Yien Li**, Department of Mathematics, Michigan State University, E.Lansing,MI (1001-65-201)

10:30AM *Newton's Method with Deflation for Isolated Singularities of Polynomial Systems.*
(5) **Anton Leykin**, **Jan Verschelde** and **Ailing Zhao***, University of Illinois at Chicago (1001-65-235)

11:00AM *Determination of the dimension of a variety and some applications.*
(6) **Wenyuan Wu*** and **Greg Reid**, Department of Applied Mathematics, University of Western Ontario (1001-14-94)

Special Session on Iterated Function Systems and Analysis on Fractals, I

8:30 AM – 10:50 AM Room L 160, Technological Institute

Organizers: **Ka-Sing Lau**, Chinese University of Hong Kong
Stephen S.-T. Yau, University of Illinois at Chicago

8:30AM *Orthogonal families of exponentials.*
(7) **Steen Pedersen**, Wright State University (1001-28-361)

9:00AM *Variable coefficient Iterated Function Systems associated with multiresolution analysis.*
► (8) **Palle E. T. Jorgensen**, University of Iowa (1001-46-05)

9:30AM *Refinable functions with arbitrary dilations.*
(9) **Yang Wang***, Georgia Institute of Technology, and **De-jun Feng**, Tsinghua University (1001-28-07)

10:00AM *The $3x+1$ Semigroup.* Preliminary report.
► (10) **David Applegate**, At&T Labs-Research, and **Jeffrey C Lagarias***, University of Michigan (1001-11-352)

10:30AM *On the Connectedness and Disklikeness of Self-affine Tiles.* Preliminary report.
(11) **Ka-Sing Lau***, Department of Mathematics, The Chinese University of Hong Kong, and **King Shun Leung**, Department of Mathematics, Hong Kong Inst.of Education (1001-26-54)

Special Session on Nonlinear Waves, I

8:30 AM – 11:20 AM Room L R2, Technological Institute

Organizers: **Jerry L. Bona**, University of Illinois at Chicago

The time limit for each contributed paper in the sessions is ten minutes. In the Special Sessions the time limit varies from session to session and within sessions. To maintain the schedule, time limits will be strictly enforced.

For papers with more than one author, an asterisk follows the name of the author who plans to present the paper at the meeting.

Papers flagged with a solid triangle (►) have been designated by the author as being of possible interest to undergraduate students.

Abstracts of papers presented in the sessions at this meeting will be

found in Volume 25, Issue 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.

Shuming Sun, Virginia Polytechnic Institute and State University

Bingyu Zhang, University of Cincinnati

- 8:30AM
▶ (12) *Collapse dynamics in Yang-Mills, nonlinear Schroedinger and Keller-Segel equations.* Preliminary report.
I M Sigal, University of Notre Dame and University of Toronto (1001-35-368)
- 9:00AM
(13) *Eventual Periodicity for dispersive wave equations in a quarter plane.*
Jiahong Wu, Oklahoma State University (1001-35-152)
- 9:30AM
(14) *Comparison of Quarter-plane and Two-point Boundary Value Problems: The BBM-equation.* Preliminary report.
Hongqiu Chen*, University of Memphis and University of Illinois at Chicago, **Jerry L Bona**, University of Illinois at Chicago, **Shuming Sun**, Virginia Polytechnic Institute and State University, and **Bingyu Zhang**, University of Cincinnati (1001-35-327)
- 10:00AM
(15) *Beyond -3/4 for the Korteweg-de Vries Equation.* Preliminary report.
Jerry L. Bona, University of Illinois at Chicago, **Shuming Sun**, Virginia Tech, and **Bing-Yu Zhang***, University of Cincinnati (1001-35-158)
- 10:30AM
(16) *The initial-boundary value problem for the one-dimensional nonlinear Schrödinger equation.*
Justin Holmer, University of California, Berkeley (1001-35-309)
- 11:00AM
(17) *Spectra of Positive and Negative Energies in the Linearized NLS Problem.*
Vitali G Vougalter, University of Notre Dame Department of Mathematics (1001-35-408)

Special Session on Mathematical Problems in Robotics, I

8:30 AM – 10:45 AM Room A 110, Technological Institute

Organizer: **Robert W. Ghrist**, University of Illinois at Urbana-Champaign

- 8:30AM
(18) *Mathematical and Computational Models in Robotics and Structural Biology.*
Gregory S. Chirikjian, Johns Hopkins University (1001-43-128)
- 9:00AM
▶ (19) *Regulation of Walking Speed in Bipedal Locomotion.* Preliminary report.
Mark W Spong, University of Illinois at Urbana-Champaign (1001-93-52)
- 9:30AM
▶ (20) *Topological Localization and Mapping in the Horizontal Plane via Successive Visual Registration.* Preliminary report.
Daniel Koditschek* and **Gabriel Lopes**, University of Michigan (1001-93-374)
- 10:00AM
▶ (21) *Computer Vision Challenges: 3D Photography and Object Recognition.*
Jean A Ponce, University of Illinois at Urbana-Champaign (1001-68-290)

Special Session on Algebraic Representations and Deformations, I

8:30 AM – 10:50 AM Room LG 52, Technological Institute

Organizers: **Stephen R. Doty**, Loyola University of Chicago
Anthony Giaquinto, Loyola University of Chicago

- 8:30AM
(22) *Endo-trivial modules for finite groups of Lie type (joint work with J. Carlson and D. Nakano).*
Nadia Paola Mazza, University of Georgia, Athens, GA (1001-20-89)
- 9:00AM
▶ (23) *Ideal Structure of Iterated Smash Tensor Power of the Restricted Enveloping Algebra of sl_2 .* Preliminary report.
Stefan Catoiu, DePaul University (1001-16-386)
- 9:30AM
(24) *Algebras related to branching rules.* Preliminary report.
Jeb F. Willenbring, University of Wisconsin - Milwaukee (1001-22-272)
- 10:00AM
(25) *FCR factors of Enveloping algebras.*
Ian M Musson*, Department of Mathematical Sciences, University of Wisconsin-Milwaukee, and **Jeb F. Willenbring**, Department of Mathematical Sciences, University of Wisconsin- (1001-16-389)
- 10:30AM
(26) *Fixed Subrings of Noetherian Graded Regular Rings.*
Ellen E. Kirkman* and **James J. Kuzmanovich**, Wake Forest University (1001-16-262)

Special Session on Mathematical Techniques in Musical Analysis, I

8:30 AM – 11:20 AM Auditorium, Technological Institute

Organizers: **Judith Baxter**, University of Illinois at Chicago
Richard Cohn, University of Chicago
Robert Peck, Louisiana State University

- 8:30AM
(27) *Musical Properties of Quasi-Periodic Sequences.*
Norman A Carey*, Eastman School of Music, and **David L Clampitt**, Yale University (1001-11-178)
- 9:30AM
(28) *Some remarks about well-formedness.*
Domenico Vicinanza* and **Vittorio Cafagna**, Musica Inaudita - DMI - University of Salerno (1001-20-206)
- 10:30AM
▶ (29) *Rubber Band Geometry: navigating within and between microtonal universes.* Preliminary report.
Stephen G. Soderberg, Library of Congress (1001-51-355)

Special Session on Hopf Algebras at the Crossroads of Algebra, Category Theory, and Topology, I

8:30 AM – 11:20 AM Room G 45, Donald P. Jacobs Center

Organizers: **Louis H. Kauffman**, University of Illinois at Chicago
David E. Radford, University of Illinois at Chicago
Fernando J. O. Souza, University of Iowa

- 8:30AM
(30) *Groups of grouplikes of a semisimple Hopf algebra and its dual.* Preliminary report.
Yevgenia Kashina, DePaul University (1001-16-399)
- 9:00AM
(31) *Application of the Fadeev-Reshetikhin-Taxhtajan construction to produce new finite-dimensional quasitriangular Hopf algebras which are not equivalent via cocycle twisting.* Preliminary report.
Jacob Towber, Mathematics Department, De Paul University, Chicago, Illinois (1001-08-342)
- 9:30AM
(32) *Differential Algebra Structures on Families of Trees.*
Robert L. Grossman, Univ. of Illinois at Chicago, and **Richard G. Larson***, Univ. of Illinois at Chicago (1001-16-274)
- 10:00AM
(33) *A note on anti-Yetter-Drinfeld modules.*
Mihai D Staic, SUNY at Buffalo (1001-16-222)

- 10:30AM *Yetter-Drinfeld modules, flatness, and Hopf-cyclic cohomology.*
(34) **Masoud Khalkhali**, Mathematics Department, University of Western Ontario, London ON, Canada (1001-18-237)
- 11:00AM *Some results on co-Frobenius Hopf algebras.*
(35) Preliminary report.
Margaret Beattie, Mount Allison University (1001-16-348)

Special Session on Extremal Combinatorics, I

8:30 AM – 11:20 AM Room G 36, Donald P. Jacobs Center

Organizers: **Dhruv Mubayi**, University of Illinois at Chicago
Yi Zhao, University of Illinois at Chicago

- 8:30AM *It's raining hyperedges: Online intersecting hypergraphs beyond the threshold.*
(36) **Ryan Martin***, Iowa State University, **Tom Bohman**, **Alan Frieze**, Carnegie Mellon University, **Miklos Ruzsinko**, Computer and Automation Research Institute, Hungarian Academy of Sciences, and **Cliff Smyth**, Carnegie Mellon University (1001-05-29)
- 9:00AM *The Ramsey number for hypergraph cycles I.*
(37) **P Haxell***, University of Waterloo, **T. Luczak**, Adam Mickiewicz University, **Y. Peng**, Indiana State University, **V. Rodl**, Emory University, **A. Rucinski**, Adam Mickiewicz University, **M. Simonovits**, Renyi Institute of Mathematics, and **J. Skokan**, Universidade de Sao Paulo (1001-05-323)
- 9:30AM *Ramsey number of hypergraph cycles II.*
(38) **Jozef Skokan**, Universidade de Sao Paulo (1001-05-184)
- 10:00AM *Co-degree Density of hypergraphs.*
(39) **Dhruv Mubayi** and **Yi Zhao***, University of Illinois at Chicago (1001-05-192)
- 10:30AM *Extremal problems on packing of d -degenerate graphs.* Preliminary report.
(40) **Bela Bollobás**, University of Memphis, **Alexandr Kostochka*** and **Kittikorn Nakprasit**, University of Illinois at Urbana-Champaign (1001-05-18)
- 11:00AM *Maximum K_{r+1} -free graphs which are not r -partite.*
▶ (41) **Mihyun Kang**, Humboldt University, Berlin, and **Oleg Pikhurko***, Carnegie Mellon University (1001-05-137)

Special Session on Fluid Dynamics, Diffusion and Reaction, I

8:30 AM – 11:20 AM Room M 177, Technological Institute

Organizers: **Peter S. Constantin**, University of Chicago
Leonid V. Ryzhik, University of Chicago

- 8:30AM *On Reaction-Convection in Incompressible 3D-Fluid: a Homogenization Problem.*
(42) **Mark Freidlin**, University of Maryland (1001-35-174)
- 9:30AM *Effects of heat loss and differential diffusion on the propagation of a premixed flame opposed to or assisted by a imposed flow.*
(43) **Moshe Matalon**, Northwestern University (1001-35-175)
- 10:30AM *Homogenization in stationary ergodic media.*
(44) **P. Souganidis**, University of Texas (1001-35-305)

Special Session on Computability Theory and Applications, I

8:30 AM – 11:20 AM Room G 03, Donald P. Jacobs Center

Organizers: **Robert I. Soare**, University of Chicago
Denis R. Hirschfeldt, University of Chicago

- 8:30AM *Degrees of nontrivial self-embeddings of computable linear orderings.*
(45) **Rodney G. Downey**, Victoria University of Wellington, **Carl Jockusch***, University of Illinois at Urbana-Champaign, and **Joseph S. Miller**, Victoria University of Wellington (1001-03-44)
- 9:00AM *Computable structures of high rank.* Preliminary report.
(46) **W. Calvert**, University of Notre Dame, **S. S. Goncharov**, Sobolev Institute/Novosibirsk State University, **J. F. Knight***, University of Notre Dame, **O. Kudinov**, **A. S. Morozov** and **V. Puzarenko**, Sobolev Institute/Novosibirsk State University (1001-03-69)
- 9:30AM *Index sets of dense Boolean algebras.*
(47) **Barbara F. Csima***, **Antonio Montalban** and **Richard A. Shore**, Cornell University (1001-03-170)
- 10:00AM *Ramsey Degrees.*
(48) **Joseph R Mileti**, University of Chicago (1001-03-161)
- 10:30AM *Undecidability in the Enumeration Degrees.*
(49) Preliminary report.
Thomas F. Kent, University of Wisconsin, Madison (1001-03-199)
- 11:00AM *Description and Comparison of Computable Structures.* Preliminary report.
(50) **Wesley Calvert***, University of Notre Dame, **Valentina Harizanov**, George Washington University, **Julia F. Knight** and **Sara Miller**, University of Notre Dame (1001-03-82)

Special Session on Differential Geometry, I

9:00 AM – 10:50 AM Room MG 28, Technological Institute

Organizers: **Anders Ingemar Linner**, Northern Illinois University
Hongyou Wu, Northern Illinois University

- 9:00AM *Skew loops and hyperboloids.* Preliminary report.
▶ (51) **Bruce Solomon**, Indiana University (1001-53-313)
- 9:30AM *Magnetic systems with the same geodesics.*
(52) **Keith Burns***, Northwestern University, and **Vladimir Matveev**, Universitaet Freiburg (1001-53-338)
- 10:00AM *Closed, Knotted and Symmetric Solutions of the Vortex Filament Equation.* Preliminary report.
(53) **Thomas A. Ivey*** and **Annalisa M. Calini**, College of Charleston (1001-53-107)
- 10:30AM *Elastic energy and variable length.* Preliminary report.
(54) **Anders Linner**, Northern Illinois University/Northwestern (1001-58-418)

Special Session on Spectral Problems of Differential Operators, I

9:00 AM – 10:45 AM Room M 128, Technological Institute

Organizers: **Qingkai Kong**, Northern Illinois University
Hongyou Wu, Northern Illinois University

Anton Zettl, Northern Illinois University

9:00AM (55) *Sturm-Liouville Problems: A Survey*. Preliminary report.

Anton Zettl, Northern Illinois University (1001-34-244)

10:00AM (56) *Comparison of eigenvalue problems due to Krein, Feller and Atkinson*.

Hans W Volkmer, University of Wisconsin-Milwaukee (1001-47-216)

Saul Schleimer, University of Illinois at Chicago

9:00AM (67) *Minimal Triangulations of Closed Orientable Reducible 3-Manifolds*.

Alexander Charles Barchechat, Tulane University (1001-57-88)

9:30AM (68) *Eigenvalue fields of arithmetic Kleinian groups*. Preliminary report.

Emily Hamilton*, Emory University, and **Alan W Reid**, University of Texas at Austin (1001-57-363)

10:00AM (69) *The density conjecture for manifolds with bounded geometry*.

Kenneth Bromberg*, University of Utah, and **Juan Souto**, Bonn (1001-57-405)

10:30AM (70) *The mapping class group action on quasi-Fuchsian space*. Preliminary report.

Juan Souto, CNRS, and **Peter Storm***, Stanford University (1001-53-291)

11:00AM (71) *Surface groups are frequently faithful*.

Jason DeBlois and **Richard P Kent***, University of Texas at Austin (1001-57-131)

Special Session on Modern Schubert Calculus, I

9:00 AM – 11:20 AM Room G 44, Donald P. Jacobs Center

Organizers: **Ezra Miller**, University of Minnesota
Frank Sottile, Texas A&M University

9:00AM (57) *Monodromy and Galois groups of Schubert problems*.

Ravi Vakil, Stanford (1001-14-141)

9:30AM (58) *Mondrian tableaux and Littlewood-Richardson rules*. Preliminary report.

Izzet Coskun, M.I.T. (1001-14-106)

10:00AM (59) *Gröbner geometry of Schubert and Grothendieck transition formulae*.

Alexander Yong* and **Allen Knutson**, UC Berkeley (1001-14-256)

10:30AM (60) *Kogan's and Buch's problems via transition*.

Allen Knutson* and **Alexander Yong**, UC Berkeley (1001-05-344)

11:00AM (61) *Horn's Problem, Honeycombs and Vinnikov Curves*.

David E Speyer, University of California, Berkeley (1001-22-425)

Special Session on Representation Theory of Reductive Groups, I

9:00 AM – 11:20 AM Room LG 66, Technological Institute

Organizers: **Jeffrey D. Adler**, University of Akron
Ju-Lee Kim, University of Illinois at Chicago

9:00AM (62) *Representations of p -adic $GL_2(D)$* . Preliminary report.

A. Raghuram, University of Iowa (1001-22-168)

9:30AM (63) *The spherical unitary dual for split p -adic exceptional groups*.

Dan M. Ciubotaru, Massachusetts Institute of Technology (1001-22-301)

10:00AM (64) *Tempered spectrum for special unitary groups*.

David Goldberg, Purdue University (1001-22-294)

10:30AM (65) *Decomposition of Restrictions of Principal Series Representations of p -adic $GL(3)$ to a Maximal Compact Subgroup*. Preliminary report.

Peter S. Campbell and **Monica Nevins***, University of Ottawa (1001-20-289)

11:00AM (66) *On the Steinberg representation of a p -adic group*. Preliminary report.

Peter S Campbell, University of Ottawa (1001-20-288)

Special Session on Low-Dimensional Topology and Kleinian Groups, I

9:00 AM – 11:20 AM Room LG 76, Technological Institute

Organizers: **Ian Agol**, University of Illinois at Chicago
John Holt, University of Illinois at Chicago

Special Session on Special Functions, Orthogonal Polynomials, and their Applications, I

9:00 AM – 11:25 AM Room L 158, Technological Institute

Organizers: **George Gasper**, Northwestern University

Ahmed I. Zayed, DePaul University

9:00AM (72) *Orthogonal polynomials and coefficients of modular forms*.

Sharon Frechette, College of Holy Cross, **Ken Ono***, University of Wisconsin at Madison, and **Matthew Papanikolas**, Texas A&M University (1001-11-166)

9:30AM (73) *A new formula for 9 squares and Humbert's class number formulas*. Preliminary report.

Stephen C. Milne, The Ohio State University (1001-11-412)

10:00AM (74) *Generalized Lambert series identities*.

Song Heng Chan, University of Illinois at Urbana-Champaign (1001-11-341)

10:30AM (75) *The compact representation of a Leonard pair*. Preliminary report.

Paul M Terwilliger, Math Department, University of Wisconsin-Madison (1001-33-227)

11:00AM (76) *Orthogonal Polynomials in Two Discrete Variables Related to the Quantum Group $U_q(\mathfrak{so}(5))$* .

Alexander Rozenblyum, New York City College of Technology, CUNY (1001-33-43)

Special Session on Codes and Applications, I

9:00 AM – 10:50 AM Room G 42, Donald P. Jacobs Center

Organizers: **William C. Huffman**, Loyola University of Chicago

Vera S. Pless, University of Illinois at Chicago

9:00AM (77) *Explicit Goppa code construction on fibre products of Kummer Covers*.

Hiren Maharaj, Clemson University (1001-14-25)

9:30AM (78) *Enumeration of $AGL(\frac{m}{3}, \mathbb{F}_{p^3})$ -Invariant Extended Cyclic Codes*.

Xiang-dong Hou, University of South Florida (1001-05-103)

10:00AM (79) *Highly symmetric weight functions on matrix rings*.

Jay A. Wood, Western Michigan University (1001-94-373)

10:30AM *MacWilliams duality for cosets over rings.*
(80) Preliminary report.
Iwan Duursma, Univ of Illinois at
Urbana-Champaign (1001-11-404)

Special Session on Nonlinear Partial Differential Equations and Applications, I

9:00 AM – 10:55 AM Room L R3, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Mikhail Feldman, University of Wisconsin at Madison

9:00AM *Shock and boundary layers for Boltzmann equation.*
(81) **Tai-Ping Liu**, Stanford University (1001-35-203)

9:30AM *Uniqueness of weak solutions of the Navier-Stokes equations of multidimensional, compressible flow.*
(82) **David Hoff**, Indiana University (1001-35-113)

10:00AM *Nonlinear hyperbolic surface waves.*
(83) **John K Hunter**, Department of Mathematics, University of California at Davis (1001-35-400)

10:30AM *Two-dimensional regular shock reflection for the pressure gradient system of conservation laws.*
(84) Preliminary report.
Yuxi Zheng, Penn State University (1001-35-234)

Special Session on Stability Issues in Fluid Dynamics, I

9:30 AM – 11:20 AM Room L R4, Technological Institute

Organizers: **Susan J. Friedlander**, University of Illinois at Chicago
Roman Shvydkoy, University of Illinois at Chicago

9:30AM *The effect of gravity modulation on the onset of filtration convection.* Preliminary report.
▶ (85) **Natalya Popova**, University of Illinois at Chicago (1001-76-326)

10:00AM *Generic hydrodynamic instability via contact homology.*
(86) **Robert Christ***, University of Illinois, Urbana-Champaign, Mathematics, and **John Etnyre**, University of Pennsylvania, Mathematics (1001-37-395)

10:30AM *Fractal patterns formed by growth of radial viscous fingers.*
(87) **Harry L. Swinney***, **O. Praud** and **E. Sharon**, University of Texas at Austin (1001-76-293)

11:00AM *Faraday wave pattern selection via multi-frequency forcing.*
(88) **Mary Silber***, Applied Mathematics Dept., Northwestern University, **Jeff Porter**, Dept. of Applied Mathematics, University of Leeds, and **Chad M. Topaz**, Dept. of Mathematics, UCLA (1001-76-245)

Special Session on Applications of Motives, I

9:30 AM – 11:20 AM Room L 211, Technological Institute

Organizers: **Eric M. Friedlander**, Northwestern University
Alexander Goncharov, Brown University
Mikhail Kapranov, Yale University
Yuri Manin, Max Planck Institute for Mathematics

9:30AM *On some parity questions about pure and mixed motives.* Preliminary report.
(89) **Yves Andre**, Ecole Normale Supérieure (1001-14-159)

10:30AM *Motivic decomposition of projective homogeneous varieties and the method of Bialynicki-Birula.*
(90) Preliminary report.
Patrick Brosnan, UCLA (1001-14-123)

Special Session on Index Theory, Morse Theory, and the Witten Deformation Method, I

9:30 AM – 11:15 AM Room L 221, Technological Institute

Organizers: **Igor Prokhoronkov**, Texas Christian University
Ken Richardson, Texas Christian University

9:30AM *Kirwan-Novikov inequalities on a manifold with boundary.*
(91) **Maxim Braverman**, Northeastern University (1001-58-345)

10:30AM *Topology of Quasiperiodic Functions on the Plane.*
(92) **Sergey P Novikov**, IPST and Math Department, University of Maryland, College Park (1001-37-381)

AMS Special Presentation, Part I

9:30 AM – 11:00 AM Room L 170, Technological Institute

TA Development using case studies: A workshop for faculty
Organizer: **Diane Herrmann**, University of Chicago

Special Session on Algebraic Topology: Interactions with Representation Theory and Algebraic Geometry, I

10:00 AM – 10:50 AM Room LG 68, Technological Institute

Organizers: **Paul G. Goerss**, Northwestern University
Jesper Kragh Grodal, University of Chicago
Brooke E. Shipley, University of Illinois at Chicago

10:00AM *Dyer-Lashof algebras for Morava E-theory.*
(93) Preliminary report.
Charles W Rezk, Assistant Professor/University of Illinois at Urbana-Champaign (1001-55-306)

10:30AM *On Jacobians of complex curves with boundary.*
(94) **T. Fiore** and **I. Kriz***, University of Michigan (1001-55-351)

Special Session on Geometric Aspects of the Langlands Program, I

10:00 AM – 10:50 AM Room L 251, Technological Institute

Organizers: **Edward Frenkel**, University of California Berkeley
Dennis Gaietsgory, University of Chicago
Mark Goresky, Institute for Advanced Study
Kari Vilonen, Northwestern University

10:00AM *Introduction to the Geometric Langlands Correspondence.*
▶ (95) **Edward Frenkel**, University of California, Berkeley (1001-14-254)

Invited Address

11:40 AM – 12:30 PM Auditorium, Technological Institute

- (96) *Fractional dimensions in geometry and algebra.*
Yuri Manin, Northwestern University

AMS Special Presentation, Part II

1:00 PM – 2:00 PM Room L 170, Technological Institute

TA Development using case studies: A workshop for faculty

Organizer: **Diane Herrmann**, University of Chicago

Invited Address

2:00 PM – 2:50 PM Auditorium, Technological Institute

- ▶ (97) *The geometry and topology of reconfiguration.*
Robert Ghrist, University of Illinois, Urbana-Champaign, Mathematics (1001-68-396)

Special Session on Differential Geometry, II

3:00 PM – 5:50 PM Room MG 28, Technological Institute

Organizers: **Anders Ingemar Linner**, Northern Illinois University
Hongyou Wu, Northern Illinois University

- 3:00PM (98) *Positive harmonic function on open manifolds with non-positive curvature.*
Jianguo Cao*, University of Notre Dame,, **Huijun Fan**, Peking University, and **Francois Ledreppier**, Univeristy of Notre Dame (1001-58-220)
- 3:30PM (99) *K-Surfaces (smooth and discrete) of non-finite type.* Preliminary report.
Ivan Charles Sterling, St Mary's College of Maryland (1001-53-265)
- 4:00PM (100) *Soliton surfaces in the mechanical equilibrium of closed membranes.*
Brian Smyth, University of Notre Dame (1001-53-271)
- 4:30PM (101) *Spectral properties of the Fourier-Mukai transform.*
James F. Glazebrook*, Eastern Illinois University and University of Illinois at Urbana-Champaign, **Marcos Jardim**, IMECC-UNICAMP, Campinas, Brazil, and **Franz W. Kamber**, University of Illinois at Urbana-Champaign (1001-58-15)
- 5:00PM (102) *Dupin hypersurfaces with four principal curvatures.* Preliminary report.
Thomas E Cecil, College of the Holy Cross, **Quo-Shin Chi** and **Gary R Jensen***, Washington University (1001-53-238)

Special Session on Stability Issues in Fluid Dynamics, II

3:00 PM – 5:50 PM Room L R4, Technological Institute

Organizers: **Susan J. Friedlander**, University of Illinois at Chicago
Roman Shvydkoy, University of Illinois at Chicago

- 3:00PM (103) *Regularity of Variational Weak Solutions of the Euler Equations.*
Alexander Shnirelman, Concordia University, Montreal (1001-35-424)
- 3:30PM (104) *Are viscoelastic flows under control or out of control?*
Michael Renardy, Virginia Tech (1001-76-10)

- 4:00PM (105) *The Tiger fountain problem.* Preliminary report.
Carmen Chicone, University of Missouri-Columbia (1001-76-139)

4:30PM Break

- 5:00PM (106) *Viscous and Viscoelastic Potential Flow.*
Daniel D. Joseph, University of Minnesota (1001-35-242)

- 5:30PM (107) *PROST: a Parabolic Reconstruction Of Surface Tension for the volume-of-fluid method.*
Yuriko Renardy, Department of Mathematics, Virginia Tech (1001-76-17)

Special Session on Iterated Function Systems and Analysis on Fractals, II

3:00 PM – 5:50 PM Room L 160, Technological Institute

Organizers: **Ka-Sing Lau**, Chinese University of Hong Kong
Stephen S.-T. Yau, University of Illinois at Chicago

- 3:00PM (108) *Some good news about those gaps in the spectrum of the Laplacian on certain fractals.*
Robert S. Strichartz, Math Dept, Cornell Univ, (1001-28-42)
- 3:30PM (109) *Self-similar Dirichlet forms on p.c.f. fractals.*
B. M. Hambly, University of Oxford, **V. Metz**, Bielefeld University, and **A. Teplyaev***, University of Connecticut (1001-46-410)
- 4:00PM (110) *Local structures and differentiation on fractals.*
Martina C. Zähle, Mathematical Institute, University of Jena, Germany (1001-28-78)
- 4:30PM (111) *Measurable Riemannian geometry on a self-similar set, energy measue and heat kernel estimate.*
Jun Kigami, Graduate School of Informatics, Kyoto University (1001-31-47)
- 5:00PM (112) *Quasisymmetric and quasiconformal equivalence of post-critically finite self-similar sets.*
Jeremy T. Tyson* and **Jang-Mei G. Wu**, University of Illinois (1001-30-142)
- 5:30PM (113) *Entropy spectrum of Banach valued Birkhoff ergodic average.* Preliminary report.
Ai-hua Fan, Picardie University (1001-37-150)

Special Session on Algebraic Topology: Interactions with Representation Theory and Algebraic Geometry, II

3:00 PM – 5:50 PM Room LG 68, Technological Institute

Organizers: **Paul G. Goerss**, Northwestern University
Jesper Kragh Grodal, University of Chicago
Brooke E. Shipley, University of Illinois at Chicago

- 3:00PM (114) *On conformal field theories and dessins d'enfants.* Preliminary report.
Po Hu, Wayne State University (1001-55-367)
- 3:30PM (115) *Orbifolds and Stable Equivariant Homotopy Groups.* Preliminary report.
Johann K Leida, Univ. of Wisconsin-Madison (1001-55-179)
- 4:00PM (116) *Complete Segal spaces as models for simplicial categories.* Preliminary report.
Julie Bergner, University of Notre Dame (1001-55-99)
- 4:30PM (117) *The p-adic K-theory of the Bousfield-Kuhn Functor.*
Kristen Joy Schemmerhorn, Albion College (1001-55-231)

- 5:00PM *A localization sequence for $K(ku)$.*
(118) **Andrew J. Blumberg**, University of Chicago (1001-19-337)
- 5:30PM *Computations for Toroidal Orbifolds.* Preliminary report.
(119) **A Adem***, University of Wisconsin, and **J Pan**, Academia Sinica (1001-20-133)

Special Session on Nonlinear Waves, II

3:00 PM – 5:50 PM **Room L R2, Technological Institute**

Organizers: **Jerry L. Bona**, University of Illinois at Chicago
Shuming Sun, Virginia Polytechnic Institute and State University
Bingyu Zhang, University of Cincinnati

- 3:00PM *Special solutions of a Boussinesq system.*
▶ (120) Preliminary report.
Min Chen, Purdue University (1001-76-280)
- 3:30PM *The Existence of Three Dimensional Localized Waves.*
(121) **Shu-Ming Sun***, Virginia Tech, and **Mark Groves**, Loughborough University, UK (1001-76-278)
- 4:00PM *Control of the surface of water by a wavemaker.*
(122) **Lionel Rosier**, Institut Elie Cartan de Nancy (1001-76-190)
- 4:30PM *On the variational characterization of KdV multi-solitons.* Preliminary report.
(123) **John P. Albert***, University of Oklahoma, **Jerry L. Bona**, University of Illinois at Chicago, and **Nghiem V. Nguyen**, University of Oklahoma (1001-35-279)
- 5:00PM *Decay of Solutions for Some Nonlinear Partial Differential Equations.* Preliminary report.
▶ (124) **Jerry Bona**, University of Illinois at Chicago, USA, **Thanasis Fokas**, University of Cambridge, UK, and **Laihan Luo***, Richard Stockton College of New Jersey, USA (1001-35-261)
- 5:30PM *Generalized Poincaré–Hopf bifurcation and galloping instability of traveling waves.*
(125) **Benjamin Texier*** and **Kevin Zumbrun**, Indiana University (1001-35-308)

Special Session on Mathematical Problems in Robotics, II

3:00 PM – 5:45 PM **Room A 110, Technological Institute**

Organizer: **Robert W. Ghrist**, University of Illinois at Urbana-Champaign

- 3:00PM *Topology in Motion Planning.*
(126) **Howie Choset*** and **Alfred A Rizzi**, Carnegie Mellon (1001-54-51)
- 3:30PM *Minimum-Switch Motion Planning with a Discrete Set of Vector Fields.* Preliminary report.
▶ (127) **Kevin M Lynch**, Northwestern University (1001-93-196)
- 4:00PM *Pursuit-evasion in complex environments: from graphs to polygons.*
▶ (128) **Volkan Isler**, University of Pennsylvania (1001-05-100)
- 4:30PM *New results in topological robotics.* Preliminary report.
(129) **S Yuzvinsky**, University of Oregon (1001-55-182)
- 5:00PM *Control of Shape and Distribution for Swarming Behaviors.* Preliminary report.
(130) **Luiz Chaimowicz** and **Vijay Kumar***, GRASP Lab. - University of Pennsylvania (1001-93-253)

Special Session on Spectral Problems of Differential Operators, II

3:00 PM – 6:20 PM **Room M 128, Technological Institute**

Organizers: **Qingkai Kong**, Northern Illinois University
Hongyou Wu, Northern Illinois University
Anton Zettl, Northern Illinois University

- 3:00PM *Continuous Families of Complete, Negatively Curved Metrics with the Same Scattering Data.*
(131) **Peter A. Perry***, University of Kentucky, and **Dorothee Schueth**, Humboldt-Universität zu Berlin (1001-35-349)
- 4:00PM *On the spectrum of the Euler equations.*
(132) **Susan Friedlander**, University of Illinois-Chicago (1001-76-87)
- 5:00PM *Detour torsion.*
(133) **Thomas Branson***, University of Iowa, and **A. Rod Gover**, University of Auckland (1001-53-300)
- 6:00PM *Asymptotic expansions of the eigenvalues of anharmonic oscillators.* Preliminary report.
(134) **Kwang C. Shin**, University of Missouri-Columbia (1001-34-393)

Special Session on Geometric Aspects of the Langlands Program, II

3:00 PM – 4:50 PM **Room L 251, Technological Institute**

Organizers: **Edward Frenkel**, University of California Berkeley
Dennis Gaitsgory, University of Chicago
Mark Goresky, Institute for Advanced Study
Kari Vilonen, Northwestern University

- 3:00PM *On de Jong's conjecture.*
(135) **Dennis Gaitsgory**, The University of Chicago (1001-11-268)
- 4:00PM *Real groups and the geometric Langlands program.*
(136) **David Nadler**, University of Chicago (1001-14-296)

Special Session on Applications of Motives, II

3:00 PM – 5:50 PM **Room L 211, Technological Institute**

Organizers: **Eric M. Friedlander**, Northwestern University
Alexander Goncharov, Brown University
Mikhail Kapranov, Yale University
Yuri Manin, Max Planck Institute for Mathematics

- 3:00PM *Motivic fundamental groups and Feynman integrals.* Preliminary report.
(137) **Alexander Goncharov**, Brown University (1001-14-124)
- 4:00PM *Representations of p -adic groups and Chow motives.* Preliminary report.
(138) **Julia Gordon**, University of Toronto (1001-14-125)
- 5:00PM *Floer homology of ind-schemes.* Preliminary report.
(139) **Mikhail Kapranov**, Yale University (1001-14-127)

Special Session on Algebraic Representations and Deformations, II

3:00 PM – 5:50 PM Room LG 52, Technological Institute

Organizers: **Stephen R. Doty**, Loyola University of Chicago
Anthony Giaquinto, Loyola University of Chicago

3:00PM (140) *Results on the peak algebra of the symmetric group algebra.*

Kathryn Nyman*, Loyola University Chicago, **Marcelo Aguiar**, Texas A & M University, and **Rosa Orellana**, Dartmouth College (1001-05-434)

3:30PM (141) *Extensions, Levi subgroups, and Lusztig conjectures.*

Leonard Scott, The University of Virginia (1001-20-266)

4:00PM (142) *Representation type of Schur superalgebras.*

David J Hemmer*, University of Toledo, **Jonathan Kujawa** and **Daniel Nakano**, University of Georgia (1001-20-210)

4:30PM (143) *On the "q to -q" phenomenon.* Preliminary report.

Bhama Srinivasan, University of Illinois at Chicago (1001-20-382)

5:00PM (144) *Quantized hyperalgebras of rank one.*

William Chin* and **Leonid Krop**, DePaul University (1001-16-263)

5:30PM (145) *Quantum- and Quasi-Plücker Coordinates.*

Aaron Lauve, Rutgers University–New Brunswick (1001-16-24)

Special Session on Modern Schubert Calculus, II

3:00 PM – 5:20 PM Room G 44, Donald P. Jacobs Center

Organizers: **Ezra Miller**, University of Minnesota
Frank Sottile, Texas A&M University

3:00PM (146) *Experimentation in real Schubert calculus for flag manifolds.* Preliminary report.

James Ruffo, TAMU, **Yuval Sivan**, **Evgenia Soprunova***, University of Massachusetts, Amherst, and **Frank Sottile**, TAMU (1001-14-273)

3:30PM (147) *Applying Pieri Homotopies to compute dynamic output feedback laws.*

Yusong Wang* and **Jan Verschelde**, University of Illinois at Chicago (1001-12-194)

4:00PM (148) *Lower bounds in some problems of real Schubert calculus.* Preliminary report.

Alexandre Eremenko and **Andrei Gabrielov***, Purdue University (1001-14-65)

4:30PM (149) *Tranversality of non-general Schubert cycles.*

Brian Osserman, University of California, Berkeley (1001-14-223)

5:00PM (150) *Quantum cohomology of isotropic Grassmannians.*

Harry Tamvakis, Brandeis University (1001-14-230)

Special Session on Representation Theory of Reductive Groups, II

3:00 PM – 5:20 PM Room LG 66, Technological Institute

Organizers: **Jeffrey D. Adler**, University of Akron
Ju-Lee Kim, University of Illinois at Chicago

3:00PM (151) *Equivalence of Data Parametrizing Tame Supercuspidal Representations.*

Jeffrey L Hakim, American University (1001-22-282)

3:30PM (152) *Distinguished supercuspidal representations.* Preliminary report.

Jeffrey Hakim, American University, and **Fiona Murnaghan***, University of Toronto (1001-22-155)

4:00PM (153) *Uniqueness of minimal representation.* Preliminary report.

Gordan Savin, University of Utah (1001-22-130)

4:30PM (154) *Distinguished, but not even.*

Stephen DeBacker, University of Michigan (1001-22-406)

5:00PM (155) *On the Theta Correspondences for U(1) and the Quasi-split U(2).* Preliminary report.

Ryan Stufelbeam, Boston College (1001-22-249)

Special Session on Low-Dimensional Topology and Kleinian Groups, II

3:00 PM – 5:50 PM Room LG 76, Technological Institute

Organizers: **Ian Agol**, University of Illinois at Chicago

John Holt, University of Illinois at Chicago

Saul Schleimer, University of Illinois at Chicago

3:00PM (156) *Noncyclic covers of knot complements.*

Nathan Darrell Broaddus, Cornell University (1001-57-55)

3:30PM (157) *Quasiconformal homogeneity of hyperbolic manifolds.*

Dick Canary, University of Michigan (1001-00-433)

4:00PM (158) *Cusp Shapes of Hyperbolic Link Complements.*

Jessica S Purcell, University of Texas at Austin (1001-57-275)

4:30PM (159) *Group Actions and Codimension One Foliations.*

Sergio Fenley, Florida State University, and **Rachel Roberts***, Washington University (1001-57-415)

5:00PM (160) *Closed Essential Surfaces in the Complements of Large Volume Berge Knots.*

Ken Baker, The University of Georgia at Athens (1001-57-379)

5:30PM (161) *Cohomology constructions for hyperbolic knot and link complements.*

Anneke Bart and **Kevin P. Scannell***, Saint Louis University (1001-57-365)

Special Session on Special Functions, Orthogonal Polynomials, and their Applications, II

3:00 PM – 5:25 PM Room L 158, Technological Institute

Organizers: **George Gasper**, Northwestern University

Ahmed I. Zayed, DePaul University

3:00PM (162) *Ramanujan Continued Fractions and Orthogonal Polynomials.*

Mourad E H Ismail*, University of Central Florida, Orlando, FL 33218, and **Dennis Stanton**, School of Mathematics, University of Minnesota (1001-33-315)

3:30PM (163) *A conditionally convergent double series of ordinary Bessel functions in Ramanujan's lost notebook.*

Bruce C. Berndt, University of Illinois at Urbana-Champaign (1001-33-241)

4:00PM (164) *On Generalizations of Certain Well-Known q-series Identities Associated to Root Systems.*

Hasan Coskun, Texas A&M University-Commerce (1001-33-163)

- 4:30PM *Poisson Kernel for the associated continuous q -Jacobi Polynomials*. Preliminary report.
(165) **Mizan Rahman**, Carleton University, and **Tariq M Qazi***, Virginia State University (1001-33-151)
- 5:00PM *Summation, transformation, and expansion formulas for elliptic, modular, and theta hypergeometric series*. Preliminary report.
(166) **George Gasper**, Northwestern University (1001-33-30)

Special Session on Mathematical Techniques in Musical Analysis, II

3:00 PM – 5:40 PM Auditorium, Technological Institute

Organizers: **Judith Baxter**, University of Illinois at Chicago
Richard Cohn, University of Chicago
Robert Peck, Louisiana State University

- 3:00PM *Wreath Products, n -Cubes, and Musical Voice-Leading*. Preliminary report.
▶ (167) **Jack M Douthett***, TVI Community College, and **Richard Hermann**, University of New Mexico (1001-20-212)
- 4:00PM *The Algebra of Minimal Voice Leading among Triads of All Species*. Preliminary report.
▶ (168) **Ian Quinn**, Department of Music, Yale University (1001-00-409)
- 5:00PM *Minimal Voice-leading*.
▶ (169) **Dmitri Tymoczko**, Princeton University (1001-05-156)

Special Session on Hopf Algebras at the Crossroads of Algebra, Category Theory, and Topology, II

3:00 PM – 5:50 PM Room G 45, Donald P. Jacobs Center

Organizers: **Louis H. Kauffman**, University of Illinois at Chicago
David E. Radford, University of Illinois at Chicago
Fernando J. O. Souza, University of Iowa

- 3:00PM *Parametrization of simple modules for the Quantum double of Frobenius-Lusztig kernels*.
(170) **Leonid Krop***, Department of Mathematical Sciences, DePaul University, and **David E Radford**, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago (1001-16-148)
- 3:30PM *A Left Quantum Group*.
(171) **Suemi Rodriguez-Romo**, Universidad Nacional Autonoma de Mexico, and **Earl J. Taft***, Rutgers University (1001-16-56)
- 4:00PM *A New Lie Bialgebra Structure on $sl(2, 1)$* .
(172) **Gizem Karaali**, University of California, Santa Barbara (1001-17-285)
- 4:30PM *Representations of the Hopf algebra $U(n)$* . Preliminary report.
(173) **Mitsuhiro Takeuchi**, University of Tsukuba, Institute of Mathematics (1001-16-188)
- 5:00PM *Hopf-algebraic approach to super affine groups and super formal groups*. Preliminary report.
(174) **Akira Masuoka**, University of Tsukuba, Institute of Mathematics (1001-16-187)
- 5:30PM *Representations of quantum groups: constructions and characters from a Hopf algebraic point of view*.
(175) **Marc Rosso**, Departement de Mathematiques et Applications, Ecole Normale Superieure, Paris, France (1001-20-353)

Special Session on Extremal Combinatorics, II

3:00 PM – 5:20 PM Room G 36, Donald P. Jacobs Center

Organizers: **Dhruv Mubayi**, University of Illinois at Chicago
Yi Zhao, University of Illinois at Chicago

- 3:00PM *Incidence matrices and a zero-sum Ramsey-type problem*.
(176) **Richard M Wilson**, Department of Mathematics, California Institute of Technology (1001-05-343)
- 3:30PM *Extremal Problems for Linear Dependences*.
▶ (177) **Jacques A Verstraete**, University of Waterloo (1001-05-181)
- 4:00PM *Listening for Perfect Matchings in Bipartite Graphs*. Preliminary report.
(178) **Andre E Kezdy**, University of Louisville (1001-05-140)
- 4:30PM *Creating a giant component*.
(179) **Tom Bohman*** and **David Kravitz**, Carnegie Mellon University (1001-05-394)
- 5:00PM *Large graphs with bounded degree and no long induced path*.
(180) **Myung S Chung**, National Institutes of Health, **Tao Jiang**, Miami University of Ohio, and **Douglas B West***, University of Illinois (1001-05-177)

Special Session on Index Theory, Morse Theory, and the Witten Deformation Method, II

3:00 PM – 5:45 PM Room L 221, Technological Institute

Organizers: **Igor Prokhoronkov**, Texas Christian University
Ken Richardson, Texas Christian University

- 3:00PM *Morse inequalities for orbit spaces*.
(181) **Jesús A. Álvarez López*** and **Manuel Calaza Cabanas**, Universidade de Santiago de Compostela (1001-58-209)
- 4:00PM *Laplace Transforms, Dynamics and Spectral Geometry*.
(182) **Dan Burghelea***, OSU, Columbus, OH, and **Stefan Haller**, Department of mathematics, University of Vienna (1001-58-189)
- 5:00PM *The geometric complex of a Morse–Bott–Smale pair and an extension of a theorem by Bismut–Zhang*.
(183) **Dan Burghelea**, The Ohio State University, and **Stefan Haller***, University of Vienna (1001-57-111)

Special Session on Fluid Dynamics, Diffusion and Reaction, II

3:00 PM – 5:50 PM Room M 177, Technological Institute

Organizers: **Peter S. Constantin**, University of Chicago
Leonid V. Ryzhik, University of Chicago

- 3:00PM *Symmetry and related properties of positive solutions of parabolic equations on R^N* .
(184) **Peter Polacik**, School of Mathematics, University of Minnesota (1001-35-144)
- 4:00PM *Bulk diffusion for interacting random walks in random media*.
(185) **Jeremy Quastel**, University of Toronto (1001-35-176)

5:00PM *Jacobian estimates for Ginzburg-Landau functionals, and applications.*
(186) **Robert Jerrard**, University of Toronto (1001-35-311)

5:30PM *A Poincare inequality on R^n and its application to potential fluid flows.*
(198) **Guozhen Lu**, Wayne State University, and **Biao Ou***, University of Toledo (1001-35-41)

Special Session on Codes and Applications, II

3:00 PM – 5:50 PM Room G 42, Donald P. Jacobs Center

Organizers: **William C. Huffman**, Loyola University of Chicago
Vera S. Pless, University of Illinois at Chicago

- 3:00PM *Parametrization of Self-Dual Binary Codes.*
(187) Preliminary report.
Gerald J. Janusz, University of Illinois at Urbana-Champaign (1001-94-32)
- 3:30PM *On the Order of the Automorphism Group of a Putative Extremal Code Vassil Yorgov.* Preliminary report.
(188) **Vassil Yorgov**, Fayetteville State University (1001-94-60)
- 4:00PM *Formally self-dual even codes of length divisible by 8.*
(189) **Jon-Lark Kim***, University of Nebraska – Lincoln, and **Vera Pless**, University of Illinois–Chicago (1001-94-251)
- 4:30PM *On the double circulant presentation of the binary extended quadratic residue code.* Preliminary report.
(190) **Mona Musa**, Southern Illinois University at Edwardsville (1001-94-335)
- 5:00PM *Negacyclic Duadic Codes.* Preliminary report.
▶ (191) **Tom Blackford**, Western Illinois University (1001-05-27)
- 5:30PM *Focused aperiodic correlation and binary phase shaping.* Preliminary report.
(192) **Jonathan I. Hall**, Department of Mathematics, Michigan State University (1001-94-191)

Special Session on Nonlinear Partial Differential Equations and Applications, II

3:00 PM – 5:55 PM Room L R3, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Mikhail Feldman, University of Wisconsin at Madison

- 3:00PM *Bifurcation and Stability for Ginzburg-Landau Model of Superconductivity.*
(193) **Tian Ma**, Indiana University and Sichuan University, and **Shouhong Wang***, Indiana University (1001-35-407)
- 3:30PM *Global Solvability for a Nonlinear Maxwell's Equation in Quasistationary Electromagnetic Fields.*
(194) **Hong-Ming Yin***, Washington State University, and **Wei Wei**, Guizhou University (1001-35-211)
- 4:00PM *Free boundary problems for quasilinear degenerate equations.*
(195) **Eun Heui Kim**, California State University Long Beach (1001-35-372)
- 4:30PM *On the pointwise jump condition of the free boundary in the 1-phase Stefan problem.* Preliminary report.
(196) **Donatella Danielli***, Purdue University, and **Marianne Korten**, Kansas State University (1001-35-385)
- 5:00PM *Obstacle problem in Carnot groups of step 2.*
(197) **Arshak Petrosyan**, Purdue University (1001-35-267)

Special Session on Geometric Partial Differential Equations, I

3:00 PM – 5:55 PM Room L R5, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Jared Wunsch, Northwestern University

- 3:00PM *Geometric optics and the wave equation on manifolds with corners.*
(199) **Andras Vasy**, Northwestern University/ MIT (1001-58-48)
- 3:30PM *The normal trace of vector fields with weak divergences.* Preliminary report.
(200) **William P. Ziemer**, Indiana University (1001-76-120)
- 4:00PM *Local pointwise and Harnack estimates for solutions of the σ_k curvature equation.*
(201) **Zheng-Chao Han**, Rutgers University, Piscataway, NJ (1001-35-200)
- 4:30PM *Solutions of Tricomi Equations.*
(202) **Qing Han**, Department of Mathematics, University of Notre Dame (1001-35-85)
- 5:00PM *Sharp local embedding inequalities.*
(203) **Junfang Li** and **Meijun Zhu***, University of Oklahoma (1001-35-83)
- 5:30PM *Motion of Surfaces by Curvature.*
(204) **Gieri Simonett**, Vanderbilt University (1001-35-225)

Special Session on Computability Theory and Applications, II

3:00 PM – 5:50 PM Room G 03, Donald P. Jacobs Center

Organizers: **Robert I. Soare**, University of Chicago
Denis R. Hirschfeldt, University of Chicago

- 3:00PM *On Downey's Conjecture.* Preliminary report.
(205) **Marat M. Arslanov**, **Iskander Sh. Kalimullin**, Kazan State University, and **Steffen Lempp***, University of Wisconsin–Madison (1001-03-132)
- 3:30PM *The initial segment complexity of random reals.*
▶ (206) **Joseph S. Miller***, Indiana University Bloomington, and **Liang Yu**, Victoria University of Wellington (1001-03-183)
- 4:00PM *Degree Spectra of Homogeneous Models.*
(207) **Karen M. Lange**, University of Chicago (1001-03-180)
- 4:30PM *Computability Theory and Logic Programming.* Preliminary report.
▶ (208) **Douglas Cenzer***, University of Florida, and **Jeffrey Remmel**, University of California at San Diego (1001-03-138)
- 5:00PM *Degrees of Saturated Models.* Preliminary report.
(209) **Kenneth A. Harris***, **Denis R. Hirschfeldt** and **Robert I. Soare**, University of Chicago (1001-03-205)
- 5:30PM *Effectively and Relatively Effectively Categorical Structures.*
(210) **Valentina Harizanov**, George Washington University (1001-03-162)

Special Session on Solving Polynomial Systems, II

3:00 PM – 5:50 PM Room G 43, Donald P. Jacobs Center

Organizers: **Anton Leykin**, University of Illinois at Chicago
Jan Verschelde, University of Illinois at Chicago

- 3:00PM Soprunova Room G 44
- 3:30PM Wang Room G 44
- 4:00PM Break
- 4:30PM *An Algebraic Method for Analyzing Dynamic Systems.* (211)
Wenqin Zhou*, Applied Mathematics Department, University of Western Ontario, London, Ontario,
Greg Reid and **David Jeffrey**, University of Western Ontario (1001-34-95)
- 5:00PM *On Polynomial Gcds over Direct Products of Fields Given by Towers of Simple Extensions.* (212)
Marc Moreno Maza*, University of Western Ontario,
Boulier, University of Lille 1 (France), and **Oancea**, University of Western Ontario (1001-12-401)
- 5:30PM *An Exact Toric Resultant-Based RUR Approach for Solving Polynomial Systems.* (213)
Koji Ouchi* and **John Keyser**, Department of Computer Science, Texas A&M University (1001-68-204)

Session for Contributed Papers

3:00 PM – 5:10 PM Room L 168, Technological Institute

- 3:00PM *Classification of simply connected 4-dim Einstein Lie groups.* (214)
Thomas Edward Poole, La Trobe University Australia (1001-53-68)
- 3:15PM *Intrinsically Linked Graphs with Knotted Components.* Preliminary report. (215)
Thomas Fleming, University of California, San Diego (1001-57-31)
- 3:30PM *Explicit Evaluations of a Class of Double L-values.* (216)
David A. Terhune, Pennsylvania State University (1001-11-20)
- 3:45PM *Relative Randomness and Real Closed Fields.* Preliminary report. (217)
Alexander Raichev, University of Wisconsin-Madison (1001-03-06)
- 4:00PM *Inductive logic of the genetic code.* (218)
Dennis F. Cudia, none (1001-92-79)
- 4:15PM *Open Formulas of Runge-Kutta Method.* (219)
Maitree Podisuk, Faculty of Science KMUTL Ladkrabang Bangkok 10520 Thailand (1001-65-149)
- 4:30PM *Properties of the von Neumann-Kakutani adding machine transformation.* (220)
Dmitriy V Akimov, North Dakota State University (1001-37-332)
- 4:45PM *Constraint Preserving Boundary Conditions for a Hyperbolic Formulation of Einstein's Equations.* (221)
Nicolae Tarfulea, University of Minnesota - Purdue University Calumet (1001-35-33)
- 5:00PM *2D Quasi-Geostrophic Equations.* (222)
Ning Ju, Oklahoma State University (1001-35-37)

Reception Hosted by the Department of Mathematics

6:00 PM – 7:00 PM Guild Lounge, Scott Hall, 601 University Ave

Sunday, October 24

Meeting Registration

7:30 AM – NOON Lobby, Technological Institute

AMS Exhibit and Book Sale

7:30 AM – NOON Room L 150, Technological Institute

Special Session on Algebraic Topology: Interactions with Representation Theory and Algebraic Geometry, III

8:00 AM – 10:50 AM Room LG 68, Technological Institute

Organizers: **Paul G. Goerss**, Northwestern University
Jesper Kragh Grodal, University of Chicago
Brooke E. Shipley, University of Illinois at Chicago

- 8:00AM *Some connected covers of the spectrum $tmf(3)$.* (223)
Mark Mahowald*, Northwestern University, and **Charles Rezk**, University of Illinois (1001-55-325)
- 8:30AM *Algebraic K-theory and sums-of-squares formulas.* (224)
Daniel C Isaksen*, Wayne State University, and **Daniel Dugger**, University of Oregon (1001-55-171)
- 9:00AM *Iterated homotopy fixed point spectra for the Lubin-Tate spectrum.* Preliminary report. (225)
Daniel G. Davis, Purdue University (1001-55-281)
- 9:30AM *Free p -group actions on products of spheres.* (226)
Özgün Ünlü, McMaster University (1001-57-310)
- 10:00AM *Dyer-Lashof operations in the string topology of spheres and projective spaces.* (227)
Craig Westerland, Institute for Advanced Study (1001-55-64)
- 10:30AM *Representation- and character theory in 2-categories.* (228)
Nora Ganter*, UIUC, and **Mikhail Kapranov**, Yale (1001-55-322)

Special Session on Solving Polynomial Systems, III

8:00 AM – 11:20 AM Room G 43, Donald P. Jacobs Center

Organizers: **Anton Leykin**, University of Illinois at Chicago
Jan Verschelde, University of Illinois at Chicago

- 8:00AM *The maximum likelihood degree and the likelihood equations.* (229)
Fabrizio Catanese, Universitaet Bayreuth,
Serkan Hosten*, San Francisco State University, Mathematics Department, **Amit Khetan**, University of Massachusetts, Amherst, and **Bernd Sturmfels**, University of California, Berkeley (1001-14-164)
- 8:30AM *Reconstructing dynamical systems from their zeta functions.* (230)
Christopher J Hillar, U.C. Berkeley (1001-12-121)
- 9:00AM *Resultants of Sparse Polynomials and Toric Vanishing Theorems.* (231)
Amit Khetan, University of Massachusetts Amherst (1001-14-57)
- 9:30AM *On Smale's 6th Problem: A solution in the four-body case.* (232)
Marshall E Hampton* and **Richard Moeckel**, University of Minnesota (1001-37-119)

- 10:00AM *Cellular Exclusion Algorithms for Polynomial Systems.*
 ▶ (233) **Eugene L. Allgower***, Colorado State University, and **Kurt Georg**, deceased (1001-65-195)
- 10:30AM *Solving the Polynomial Equations of the Geometric Design Problem of the Spatial 3R Mechanisms.*
 (234) **Eric C Lee*** and **Constantinos Mavroidis**, Northeastern University (1001-14-421)
- 11:00AM *Using Polynomial Homotopy Method to Mechanism Synthesis.*
 ▶ (235) **Hai-Jun Su**, University of California, Irvine (1001-08-129)

Special Session on Iterated Function Systems and Analysis on Fractals, III

8:30 AM – 10:50 AM Room L 160, Technological Institute

Organizers: **Ka-Sing Lau**, Chinese University of Hong Kong
Stephen S.-T. Yau, University of Illinois at Chicago

- 8:30AM *Gaussian Random Fields and Salem Sets.*
 (236) Preliminary report.
Yimin Xiao, Michigan State University (1001-60-81)
- 9:00AM *Absolute continuity for IFS with random maps.*
 (237) Preliminary report.
Yuval Peres, University of California, Berkeley, **Károly Simon**, Technical University of Budapest, and **Boris Solomyak***, University of Washington (1001-37-74)
- 9:30AM *General finite type IFS and M-matrix.* Preliminary report.
 (238) **Stephen S.T. Yau***, Dept. of Math. Stat. & Computer Sci., University of Illinois at Chicago, and **Ning Jin**, Dept. of Math., Nanjing University, China (1001-37-11)
- 10:00AM *A generalized finite type condition for iterated function systems.*
 (239) **Ka-Sing Lau**, Department of Mathematics, The Chinese University of Hong Kong, and **Sze-Man Ngai***, Department of Mathematical Sciences, Georgia Southern University (1001-28-112)
- 10:30AM *Asymptotical Geometry of Cantor Systems.*
 (240) **Yunping Jiang**, CUNY/CAS (1001-37-77)

Special Session on Nonlinear Waves, III

8:30 AM – 11:20 AM Room L R2, Technological Institute

Organizers: **Jerry L. Bona**, University of Illinois at Chicago
Shuming Sun, Virginia Polytechnic Institute and State University
Bingyu Zhang, University of Cincinnati

- 8:30AM *On the persistence of KdV solitons in the unstable dynamics of inclined film flow.* Preliminary report.
 (241) **Robert L Pego***, Carnegie Mellon University, **Guido Schneider** and **Hannes Uecker**, Mathematisches Institut I, Universität Karlsruhe (1001-35-357)
- 9:00AM *Stability of solitary-wave solutions for the Ostrovsky equation with weak rotation.* Preliminary report.
 ▶ (242) **Yue Liu**, University of Texas at Arlington (1001-35-50)
- 9:30AM *Long-time Soliton Dynamics of Variable Bottom KdVs.*
 (243) **Steven Ivan Dejak***, University of Toronto, Toronto, Canada, and **I. M. Sigal**, University of Notre Dame and University of Toronto (1001-35-377)

- 10:00AM *Existence and stability of periodic travelling-wave solutions of the Benjamin equation.* Preliminary report.
 (244) **Borys Alvarez***, University of Illinois at Chicago, and **Jaime Angulo**, IMECC - UNICAMP, Brazil (1001-35-58)
- 10:30AM *Higher-Order Stability of Solitary Waves.*
 (245) **Nghiem V. Nguyen***, University of Oklahoma/Purdue University, **John P. Albert**, University of Oklahoma, **Jerry L. Bona**, University of Illinois at Chicago, and **Yue Liu**, University of Texas at Arlington (1001-35-304)
- 11:00AM *Asymptotic Stability of Nonlinear Schrödinger Equations with Potential.*
 (246) **Gang Zhou*** and **I M Sigal**, University of Notre Dame & University of Toronto (1001-35-376)

Special Session on Mathematical Problems in Robotics, III

8:30 AM – 10:45 AM Room A 110, Technological Institute

Organizer: **Robert W. Ghrist**, University of Illinois at Urbana-Champaign

- 8:30AM *Braid groups of graphs: some new results.*
 ▶ (247) Preliminary report.
Aaron D. Abrams, MSRI and Emory University (1001-57-402)
- 9:00AM *Protein Similarity from Isotopic Line Weavings.*
 ▶ (248) **Michael A. Erdmann**, Carnegie Mellon University (1001-92-213)
- 9:30AM *Optimal Robot Navigation Without Measuring Distances.*
 (249) **Steven M. LaValle***, **Benjamin Tovar**, **Luis Guilamo** and **Rafael Murrieta**, University of Illinois at Urbana-Champaign (1001-68-364)
- 10:00AM *Algorithms for Neural Prosthetics.* Preliminary report.
 ▶ (250) **Joel W Burdick**, California Institute of Technology (1001-92-370)

Special Session on Algebraic Representations and Deformations, III

8:30 AM – 10:50 AM Room LG 52, Technological Institute

Organizers: **Stephen R. Doty**, Loyola University of Chicago
Anthony Giaquinto, Loyola University of Chicago

- 8:30AM *The Noncommutative Ward Correspondence.*
 (251) Preliminary report.
K. C. Hannabuss, Balliol College, University of Oxford, and **S. J. Brain***, St Cross College, University of Oxford (1001-51-260)
- 9:00AM *Applications of the path model.* Preliminary report.
 ▶ (252) **Arun Ram**, Department of Mathematics, University of Wisconsin, Madison (1001-17-269)
- 9:30AM *New examples of quantum \mathbb{P}^3 with finitely many points.*
 (253) **Darin R. Stephenson***, Hope College, and **Michaela Vancliff**, University of Texas at Arlington (1001-16-229)
- 10:00AM *An Algebro-Geometric Method for Constructing Clifford Quantum \mathbb{P}^3 s with a Predetermined Finite Point Scheme.* Preliminary report.
 (254) **Darin R Stephenson**, Hope College, MI, and **Michaela Vancliff***, Univ. of Texas at Arlington (1001-16-250)

10:30AM *Flat Monoids and Deformations of a Semisimple Group*. Preliminary report.
(255) **Lex E. Renner**, University of Western Ontario (1001-20-110)

Special Session on Mathematical Techniques in Musical Analysis, III

8:30 AM – 11:20 AM Auditorium, Technological Institute

Organizers: **Judith Baxter**, University of Illinois at Chicago
Richard Cohn, University of Chicago
Robert Peck, Louisiana State University

8:30AM Discussion

9:30AM *From Rhythmic Canons to Fuglede's conjecture*.
(256) **Emmanuel Amiot**, Perpignan, France (1001-12-114)

10:30AM *Measuring Musical Dissimilarity: First and Second Order Center of Effect (CE) Differences Inside the Spiral Array*. Preliminary report.
▶ (257) **Elaine Chew**, University of Southern California Viterbi School of Engineering, Epstein Dep of Industrial and Systems Engineering (1001-15-416)

Special Session on Hopf Algebras at the Crossroads of Algebra, Category Theory, and Topology, III

8:30 AM – 11:20 AM Room G 45, Donald P. Jacobs Center

Organizers: **Louis H. Kauffman**, University of Illinois at Chicago
David E. Radford, University of Illinois at Chicago
Fernando J. O. Souza, University of Iowa

8:30AM *Central Braided Hopf Algebras*. Preliminary report.
(258) **Peter C Schauenburg**, Mathematisches Institut der Universität München (1001-16-186)

9:00AM *Central Invariants and Higer Indicators for Semi-simple Quasi-Hopf Algebras*. Preliminary report.
(259) **Siu-Hung Ng***, Iowa State University, and **Peter Schauenburg**, Mathematisches Institut Der Universität München (1001-16-380)

9:30AM *Canonical central elements in quasi-triangular Hopf algebras*. Preliminary report.
(260) **Thomas Kerler**, The Ohio State University (1001-16-287)

10:00AM *On integrals and trace functions for Hopf-algebra objects in symmetric, traced categories*.
(261) **Fernando J. O. Souza**, University of Iowa (1001-16-420)

10:30AM *About categories of matched pairs and Singer pairs of Hopf algebras*. Preliminary report.
(262) **Mitja Mastnak**, Dalhousie University (1001-16-347)

11:00AM *A uniqueness property for quantizations of Teichmüller spaces*. Preliminary report.
(263) **Hua Bai**, University of Southern California (1001-17-202)

Special Session on Extremal Combinatorics, III

8:30 AM – 11:20 AM Room G 36, Donald P. Jacobs Center

Organizers: **Dhruv Mubayi**, University of Illinois at Chicago
Yi Zhao, University of Illinois at Chicago

8:30AM *Optimal Graph Labellings: Edge-bandwidth of graphs*.
(264) **Jozsef Balogh***, The Ohio State University, Columbus, OH, **Dhruv Mubayi**, University of Illinois at Chicago, and **Andras Pluhar**, University of Szeged, Szeged, Hungary (1001-05-303)

9:00AM *Channel Assignments for Infinite Graphs*. Preliminary report.
(265) **Jerrold R. Griggs*** and **Xiaohua Teresa Jin**, University of South Carolina (1001-05-247)

9:30AM *On colored arithmetic progressions*.
(266) **Maria Axenovich**, Iowa State University (1001-05-154)

10:00AM *The Steiner Problem in the hypercube*. Preliminary report.
(267) **Tao Jiang*** and **Dan Pritikin**, Miami University, Oxford, Ohio (1001-05-136)

10:30AM *Convex crossing numbers, circular arrangement problem, and isoperimetric functions*.
(268) **Eva Czabarka**, College of William & Mary, **Ondrej Sykora**, Loughborough University, **Laszlo Szekely***, University of South Carolina, and **Imrich Vrto**, Institute of Informatics, Slovak Academy of Sciences (1001-05-197)

11:00AM *Families with forbidden inclusion pattern*. Preliminary report.
(269) **Gyula O.H. Katona**, University of South Carolina, Columbia, SC and Rényi Institute, Budapest, (1001-05-429)

Special Session on Fluid Dynamics, Diffusion and Reaction, III

8:30 AM – 11:20 AM Room M 177, Technological Institute

Organizers: **Peter S. Constantin**, University of Chicago
Leonid V. Ryzhik, University of Chicago

8:30AM *A variational principle based study of KPP front speeds in random shear flows*.
(270) **Jack Xin**, University of Texas (1001-35-173)

9:30AM *Estimates in singularly perturbed models for diffusion flames*.
(271) **Jean-Michel Roquejoffre**, Université Paul Sabatier Toulouse (1001-35-378)

10:30AM *Quenching of combustion by fluid flow*.
(272) **Alexander Kiselev**, University of Wisconsin, Madison (1001-35-255)

Special Session on Geometric Partial Differential Equations, II

8:30 AM – 10:55 AM Room L R5, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Jared Wunsch, Northwestern University

8:30AM *Asymptotics of neckpinching in Ricci flow*.
(273) **Sigurd B Angenent**, Math Dept/UW Madison (1001-53-236)

9:00AM *Ideal boundary conditions and intersection cohomology*.
(274) **Eugenie Hunsicker**, Lawrence University (1001-35-259)

9:30AM *The Bernstein problem in the Heisenberg group*.
(275) **Nicola Garofalo***, Purdue University, and **Scott Pauls**, Dartmouth University (1001-51-165)

- 10:00AM *Resolvents of elliptic cone operators.* Preliminary report. (276)
Juan B Gil*, Penn State Altoona, **Thomas Krainer**, University of Potsdam, Germany, and **Gerardo A Mendoza**, Temple University (1001-58-246)
- 10:30AM *Gluing and comparison formulae for the spectral invariants of Dirac operators on compact and noncompact manifolds.* (277)
Paul A Loya, SUNY Binghamton (1001-58-49)

Special Session on Computability Theory and Applications, III

8:30 AM – 11:20 AM Room G 03, Donald P. Jacobs Center

Organizers: **Robert I. Soare**, University of Chicago
Denis R. Hirschfeldt, University of Chicago

- 8:30AM *The existential theory of the jump- u sl of Turing degrees with least element.* Preliminary report. (278)
Manuel Lerman, University of Connecticut (1001-03-62)
- 9:00AM *What is computability for physical systems?* Preliminary report. (279)
Anil Nerode, Department of Mathematics, Cornell University (1001-03-185)
- 9:30AM *On Fraïssé's conjecture and some equivalent statements.* (280)
Antonio Montalban, Cornell University (1001-03-80)
- 10:00AM *Mass Problems to the Rescue!* (281)
Stephen G. Simpson, Department of Mathematics, Pennsylvania State University (1001-03-98)
- 10:30AM *Invariance and degree in the lattice of Π_1^0 classes.* (282)
Rebecca Weber, Penn State (1001-03-92)
- 11:00AM *An Application of Kolmogorov Complexity to the Structure of Scott Sets.* (283)
Theodore A. Slaman, University of California, Berkeley (1001-03-143)

Special Session on Differential Geometry, III

9:00 AM – 10:50 AM Room MG 28, Technological Institute

Organizers: **Anders Ingemar Linner**, Northern Illinois University
Hongyou Wu, Northern Illinois University

- 9:00AM *Cylindrical Contact Homology of Subcritical Stein-fillable Contact Manifolds.* (284)
Mei-Lin Yau, Michigan State University (1001-57-36)
- 9:30AM *Mixed Dimensional Compactness and $\mathbb{R}^n X S^{n-1}$ Sphere Bundle Measures.* (285)
Simon P Morgan, University of Minnesota (1001-53-09)
- 10:00AM *The Theorema Egregium for ν -Gaussian curvatures.* (286)
Matias Navarro*, Facultad de Matematicas, Universidad Autonoma de Yucatan, and **F Sanchez-Bringas**, Facultad de Ciencias, UNAM (1001-53-34)
- 10:30AM *Comparison theorems for generalized Riccati equations and applications.* Preliminary report. (287)
Libin Mou, Bradley University (1001-53-214)

Special Session on Spectral Problems of Differential Operators, III

9:00 AM – 10:50 AM Room M 128, Technological Institute

Organizers: **Qingkai Kong**, Northern Illinois University
Hongyou Wu, Northern Illinois University
Anton Zettl, Northern Illinois University

- 9:00AM *Simple and double eigenvalues of the Hill operator with a two term potential.* (288)
Boris Mityagin*, Department of Mathematics, the Ohio State University, and **Plamen Djakov** (1001-47-226)
- 10:00AM *Asymptotics of spectral gaps of 1D periodic Schroedinger operators with two term potentials.* (289)
Plamen Djakov*, Sofia University, and **Boris Mityagin**, The Ohio State University (1001-47-26)
- 10:30AM *Abstract Left-Definite Theory for Positive Self-Adjoint Operators.* (290)
L. L. Littlejohn, Department of Mathematics and Statistics, Utah State University (1001-34-302)

Special Session on Geometric Aspects of the Langlands Program, III

9:00 AM – 10:50 AM Room L 251, Technological Institute

Organizers: **Edward Frenkel**, University of California Berkeley
Dennis Gaitsgory, University of Chicago
Mark Goresky, Institute for Advanced Study
Kari Vilonen, Northwestern University

- 9:00AM *Towards higher-dimensional Langlands correspondence.* Preliminary report. (291)
Mikhail Kapranov, Yale University (1001-14-362)
- 10:00AM *Applications of Motivic Integration to Representation Theory.* (292)
Thomas C Hales, University of Pittsburgh (1001-22-219)

Special Session on Modern Schubert Calculus, III

9:00 AM – 11:20 AM Room G 44, Donald P. Jacobs Center

Organizers: **Ezra Miller**, University of Minnesota
Frank Sottile, Texas A&M University

- 9:00AM *Equivariant cohomology of the Quot scheme.* Preliminary report. (293)
Tom Braden*, University of Massachusetts, Amherst, **Linda Chen**, Ohio State University, and **Frank Sottile**, Texas A&M University (1001-14-324)
- 9:30AM *The T-equivariant cohomology of cell complexes and the case of infinite Grassmannians.* (294)
Megumi Harada, University of Toronto (1001-53-228)
- 10:00AM *Mirkovic-Vilonen cycles and polytopes.* (295)
Joel Kamnitzer, University of California, Berkeley (1001-22-307)
- 10:30AM *Generalizing group exponents using the topology of subvarieties of the flag variety.* (296)
Julianna S Tymoczko, University of Michigan (1001-14-428)
- 11:00AM *Some new results on Thom polynomials.* (297)
Richard Rimanyi, University of North Carolina at Chapel Hill (1001-14-321)

Special Session on Representation Theory of Reductive Groups, III

9:00 AM – 11:20 AM Room LG 66, Technological Institute

Organizers: **Jeffrey D. Adler**, University of Akron
Ju-Lee Kim, University of Illinois at Chicago

- 9:00AM *Transfer of generic representations from $GSp(4)$ to $GL(4)$.* (298)
Mahdi Asgari, Institute for Advanced Study (1001-11-314)
- 9:30AM *Local newforms for $GSp(4)$.* Preliminary report. (299)
Brooks Roberts*, University of Idaho, and **Ralf Schmidt**, University of Oklahoma (1001-22-105)
- 10:00AM *Saito-Kurokawa representations of $PGSp_4$ and its inner forms.* (300)
Wee Teck Gan, University of California, San Diego (1001-22-346)
- 10:30AM *Functoriality and applications.* (301)
Muthu Krishnamurthy, University of Michigan (1001-11-354)
- 11:00AM *Base Change and K -types for $U(3)$.* (302)
Joshua Michael Lansky*, American University, and **Jeffrey D. Adler**, University of Akron (1001-22-398)

Special Session on Low-Dimensional Topology and Kleinian Groups, III

9:00 AM – 11:20 AM Room LG 76, Technological Institute

Organizers: **Ian Agol**, University of Illinois at Chicago
John Holt, University of Illinois at Chicago
Saul Schleimer, University of Illinois at Chicago

- 9:00AM Discussion
- 9:30AM *Distribution of length segments for a random geodesic.* (303)
Martin Bridgeman*, Boston College, and **David Dumas**, Harvard University (1001-00-432)
- 10:00AM *Towards a classification of Primitive/Seifert-Fibered tunnel number one knots.* Preliminary report. (304)
John O. Berge, Madison, WI (1001-57-366)
- 10:30AM *Punctured torus quasifuchsian groups.* Preliminary report. (305)
Francois Gueritaud, University of Southern California (1001-57-330)
- 11:00AM *Heegaard splittings and hyperbolic geometry.* (306)
Hossein Namazi, Yale University and Stony Brook University (1001-57-422)

Special Session on Special Functions, Orthogonal Polynomials, and their Applications, III

9:00 AM – 11:25 AM Room L 158, Technological Institute

Organizers: **George Gasper**, Northwestern University
Ahmed I. Zayed, DePaul University

- 9:00AM *A Generalization of the Prolate Spheroidal Wave Functions.* Preliminary report. (307)
Ahmed I Zayed, DePaul University (1001-33-316)
- 9:30AM *A new method of calculating values of prolate spheroidal wave functions.* (308)
Gilbert G. Walter* and **Tatiana Soleski**, UW-Milwaukee (1001-41-72)

- 10:00AM *A new approach to the orthogonality of the Laguerre and Hermite polynomials.* (309)
Slobodan B. Trickovic* and **Miomir S. Stankovic**, University of Nis, Serbia (1001-33-16)
- 10:30AM *Asymptotic analysis of the Krawtchouk polynomials by the WKB method.* (310)
Diego Dominici, SUNY New Paltz (1001-41-28)
- 11:00AM *Analysis of the Paraxial Wave Equation: An Application of Special Functions.* (311)
Pete A McCoy* and **Reza Malek-Madani**, U.S. Naval Academy (1001-33-153)

Special Session on Codes and Applications, III

9:00 AM – 10:50 AM Room G 42, Donald P. Jacobs Center

Organizers: **William C. Huffman**, Loyola University of Chicago
Vera S. Pless, University of Illinois at Chicago

- 9:00AM *Constructing Optimal Linear Codes.* Preliminary report. (312)
Anton Betten, Colorado State University (1001-05-208)
- 9:30AM *On Optimal linear codes over $GF(8)$.* Preliminary report. (313)
Christopher M Jones, St. Mary's College of California (1001-94-75)
- 10:00AM *Identifying codes and their cousins.* Preliminary report. (314)
Ari Trachtenberg, Boston University (1001-94-298)
- 10:30AM *Optimal Linear Codes over Z_4 .* (315)
Steven T. Dougherty, University of Scranton, and **T. Aaron Gulliver***, University of Victoria (1001-94-340)

Special Session on Nonlinear Partial Differential Equations and Applications, III

9:00 AM – 10:55 AM Room L R3, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Mikhail Feldman, University of Wisconsin at Madison

- 9:00AM *Plasma sheaths and their dynamics.* (316)
M. Slemrod, University of Wisconsin- Madison (1001-35-40)
- 9:30AM *Regularity of solutions to anisotropic elliptic equations.* (317)
Gary M Lieberman, Iowa State University (1001-35-135)
- 10:00AM *On a Multidimensional Model for the Dynamic Combustion of Compressible Reacting Flows.* (318)
D. Donatelli, University of L'Aquila, and **K. Trivisa***, University of Maryland at College Park (1001-35-93)
- 10:30AM *Global Structure of Solutions to a Two-Dimensional System of Conservation Laws.* Preliminary report. (319)
Dehua Wang, University of Pittsburgh (1001-35-90)

Special Session on Stability Issues in Fluid Dynamics, III

9:30 AM – 11:20 AM Room L R4, Technological Institute

Organizers: **Susan J. Friedlander**, University of Illinois at Chicago
Roman Shvydkoy, University of Illinois at Chicago

- 9:30AM *Dynamic Bifurcation in Geophysical Fluid Dynamics.*
(320) **Tian Ma**, Indiana University and Sichuan University, and **Shouhong Wang***, Indiana University (1001-76-336)
- 10:00AM *Strange eigenmodes of linear operators occurring in stability theory.*
▶ (321) **Raymond T Pierrehumbert**, The University of Chicago (1001-35-23)
- 10:30AM *Stability of Lagrangian ideal flows.*
(322) **Stephane Leblanc*** and **David Guimbard**, LSEET/CNRS, University of Toulon-Var, France (1001-76-299)
- 11:00AM *Ergodicity of the degenerately forced Stochastic Navier–Stokes Equations.*
(323) **Jonathan C Mattingly***, Mathematics Department, Duke University, **Etienne Pardoux**, Universite de Provence, and **Martin Hairer**, University of Warwick, UK (1001-76-423)

Special Session on Applications of Motives, III

9:30 AM – 11:20 AM Room L 211, Technological Institute

Organizers: **Eric M. Friedlander**, Northwestern University
Alexander Goncharov, Brown University
Mikhail Kapranov, Yale University
Yuri Manin, Max Planck Institute for Mathematics

- 9:30AM *Motivic tubular neighborhoods.* Preliminary report.
(324) **Marc Levine**, Northeastern University (1001-14-117)
- 10:30AM *K-theory of log-schemes.*
(325) **Wieslawa Krystyna Niziol**, University of Utah (1001-11-417)

Special Session on Index Theory, Morse Theory, and the Witten Deformation Method, III

9:30 AM – 11:15 AM Room L 221, Technological Institute

Organizers: **Igor Prokhoronkov**, Texas Christian University
Ken Richardson, Texas Christian University

- 9:30AM *Equivalence of spectral projections in semiclassical limit and a vanishing theorem for higher traces in K-theory.*
(326) **Yuri Kordyukov**, Institute of Mathematics, Russian Academy of Sciences, Ufa, Russia, **Varghese Mathai**, University of Adelaide, Adelaide, Australia, and **Mikhail Shubin***, Northeastern University, Boston, USA (1001-58-70)
- 10:30AM *Morse Inequalities, A Path Space Approach.*
(327) **Ionel Popescu**, Northwestern University / MIT (1001-53-427)

Invited Address

11:40 AM – 12:30 PM Auditorium, Technological Institute

- (328) *Khovanov homology and nilpotent slices.*
Paul Seidel, Imperial College-London and University of Chicago (1001-00-04)

Invited Address

2:00 PM – 2:50 PM Auditorium, Technological Institute

- (329) *Two generator Kleinian groups.*
Ian Agol, University of Illinois at Chicago (1001-57-331)

Special Session on Stability Issues in Fluid Dynamics, IV

3:00 PM – 4:20 PM Room L R4, Technological Institute

Organizers: **Susan J. Friedlander**, University of Illinois at Chicago
Roman Shvydkoy, University of Illinois at Chicago

- 3:00PM *Nonlinear Instability of Ideal Plane Flows.*
(330) **Zhiwu Lin**, Courant Institute (1001-76-297)
- 3:30PM *Linear Stability in an Ideal Incompressible Fluid.*
(331) **Yuri Latushkin**, Department of Mathematics, University of Missouri-Columbia (1001-76-134)
- 4:00PM *Geometric optics spectral theory for advective equations.*
(332) **Roman Shvydkoy**, University of Illinois at Chicago (1001-35-240)

Special Session on Iterated Function Systems and Analysis on Fractals, IV

3:00 PM – 5:20 PM Room L 160, Technological Institute

Organizers: **Ka-Sing Lau**, Chinese University of Hong Kong
Stephen S.-T. Yau, University of Illinois at Chicago

- 3:00PM *A Non-Additive Thermodynamic Formalism.*
(333) Preliminary report.
Yakov Pesin and **Anna Mummert***, Penn State University (1001-37-19)
- 3:30PM *Diophantine Approximation for Conformal Measures of One-Dimensional Iterated Function Systems.*
(334) **Mariusz Urbanski**, University of North Texas (1001-37-14)
- 4:00PM *Complex Dimensions of Self-Similar Fractals: One-Dimensional Theory and the Example of the Koch Snowflake Curve in Two Dimensions.*
(335) **Michel L. Lapidus*** and **Erin P. J. Pearse**, University of California, Riverside (1001-28-61)
- 4:30PM *A tube formula for the Koch snowflake curve, with applications to complex dimensions.* Preliminary report.
(336) **Michel L. Lapidus** and **Erin P.J. Pearse***, University of California, Riverside (1001-37-22)
- 5:00PM *Hausdorff Dimension of General Sierpinski Carpets in R^m .* Preliminary report.
▶ (337) **Ning Jin**, University of Illinois at Chicago, Chicago, IL 60607 (1001-37-419)

Special Session on Algebraic Topology: Interactions with Representation Theory and Algebraic Geometry, IV

3:00 PM – 5:50 PM Room LG 68, Technological Institute

Organizers: **Paul G. Goerss**, Northwestern University
Jesper Kragh Grodal, University of Chicago

Brooke E. Shipley, University of Illinois at Chicago

- 3:00PM (338) *Automorphism groups of free groups with boundaries.*
Nathalie Wahl, Aarhus University (1001-55-320)
- 3:30PM (339) *Parametrized equivariant stable homotopy theory.*
Johann Sigurdsson*, University of Notre Dame, and **J. Peter May**, The University of Chicago (1001-55-270)
- 4:00PM (340) *The Goodwillie derivatives of a monoid.* Preliminary report.
Andrew Mauer-Oats, Northwestern University (1001-55-334)
- 4:30PM (341) *The Circle-Equivariant Sigma Orientation.* Preliminary report.
David Gepner, University of Illinois Urbana-Champaign (1001-55-276)
- 5:00PM (342) λ -ring structures over $\mathbb{Z}[[x]]$.
Donald Y. Yau, University of Illinois at Urbana-Champaign (1001-55-101)
- 5:30PM (343) *A report on weak n -categories.*
J. P. May, The University of Chicago (1001-55-284)

Special Session on Nonlinear Waves, IV

3:00 PM – 3:50 PM Room L R2, Technological Institute

Organizers: **Jerry L. Bona**, University of Illinois at Chicago
Shuming Sun, Virginia Polytechnic Institute and State University
Bingyu Zhang, University of Cincinnati

- 3:00PM (344) *A model for Landau damping in plasma physics.*
Thierry Colin*, University Bordeaux 1, **Radouin Belaouard**, **Gerard Gallice**, CEA-CESTA, and **Cedric Galusinski**, University Bordeaux 1 (1001-35-59)
- 3:30PM (345) *Forward stimulated Brillouin scattering instability of a spatially and temporally incoherent laser beam.*
Pavel M Lushnikov, Department of Mathematics, University of Notre Dame (1001-78-375)

Special Session on Mathematical Problems in Robotics, IV

3:00 PM – 5:15 PM Room A 110, Technological Institute

Organizer: **Robert W. Ghrist**, University of Illinois at Urbana-Champaign

- 3:00PM (346) *A Grammatical Approach to Self-Organizing Robotic Systems.*
Eric Klavins, University of Washington (1001-68-172)
- 3:30PM (347) *Coverage, Complexity and Feasibility Issues in Mobile Sensor Networks.* Preliminary report.
Abubakr Muhammad, Georgia Institute of Technology, Atlanta, GA (1001-93-371)
- 4:00PM (348) *Deterministic Sampling Methods for Spheres and $SO(3)$.*
Anna Yershova* and **Steven M. LaValle**, University of Illinois (1001-68-328)
- 4:30PM (349) *Collision-free motion planning.*
Michael Farber, University of Durham, UK (1001-55-397)

Special Session on Spectral Problems of Differential Operators, IV

3:00 PM – 6:20 PM Room M 128, Technological Institute

Organizers: **Qingkai Kong**, Northern Illinois University
Hongyou Wu, Northern Illinois University
Anton Zettl, Northern Illinois University

- 3:00PM (350) *A Borg type theorem for matrix-valued supersymmetric Dirac difference operators.*
S Clark*, University of Missouri-Rolla, and **F Gesztesy**, University of Missouri-Columbia (1001-34-339)
- 3:30PM (351) *On Periodic Matrix-Valued Weyl-Titchmarsh Functions.*
Miron Bekker*, University of Missouri-Rolla, and **Eduard Tsekanovskii**, Niagara University (1001-47-157)
- 4:00PM (352) *The spectral function associated with Sturm-Liouville equations with potential of Wigner-von Neumann type.*
D. J. Gilbert, Dublin Institute of Technology, **B. J. Harris**, Northern Illinois University, and **S. M. Riehl***, University of Northern Iowa (1001-34-108)
- 4:30PM (353) *Right-definite half-linear Sturm-Liouville Problems.*
Lingju Kong*, Northern Illinois University, Dekalb, IL 60115, and **Qingkai Kong**, Northern Illinois University (1001-34-45)
- 5:00PM (354) *Geometric Aspects of Sturm-Liouville Problems IV. Infinite Band for Non-Real Eigenvalues in Indefinite Case.* Preliminary report.
Kevin J. Haertzen*, University of Wisconsin-Platteville, and **Hongyou Wu**, Northern Illinois University (1001-34-358)
- 5:30PM (355) *Geometric Aspects of Sturm-Liouville Problems, V. Natural Loops of Boundary Conditions for Monotonicity of Eigenvalues and Their Applications.* Preliminary report.
Wu-Jian Peng, **Mihai T. Racovitan*** and **Hong-You Wu**, Northern Illinois University (1001-34-08)
- 6:00PM (356) *Discontinuous Boundary-Value Problems: Expansion and Sampling Theorems.*
Ahmed Zayed*, DePaul University, **M. Annaby**, Cairo University, and **G. Freiling**, University of Duisburg (1001-34-430)

Special Session on Geometric Aspects of the Langlands Program, IV

3:00 PM – 4:50 PM Room L 251, Technological Institute

Organizers: **Edward Frenkel**, University of California Berkeley
Dennis Gaitsgory, University of Chicago
Mark Goresky, Institute for Advanced Study
Kari Vilonen, Northwestern University

- 3:00PM (357) *On the stability of invariant distributions over local fields.*
David Kazhdan, Hebrew university, Jerusalem, Israel (1001-17-73)
- 4:00PM (358) *Uhlenbeck spaces for \mathbb{A}^2 and affine Lie algebras.*
Michael Finkelberg, Independent Moscow University (1001-14-76)

Special Session on Algebraic Representations and Deformations, IV

3:00 PM – 5:50 PM Room LG 52, Technological Institute

Organizers: **Stephen R. Doty**, Loyola University of Chicago
Anthony Giaquinto, Loyola University of Chicago

- 3:00PM *A q -Partition Algebra*. Preliminary report. (359) **Tom Halverson***, Macalester College, and **Arun Ram**, University of Wisconsin - Madison (1001-20-86)
- 3:30PM *Hochschild cohomology of n -algebras and string topology*. Preliminary report. (360) **Alexander A Voronov**, University of Minnesota (1001-16-145)
- 4:00PM *Deformations and Extensions of Infinity Algebras*. (361) **Michael R. Penkava**, University of Wisconsin-Eau Claire (1001-17-257)
- 4:30PM *Kronecker quiver and bases of quantum affine sl_2* . (362) **Kevin McGerty**, University of Chicago (1001-16-356)
- 5:00PM *Quantum group actions, R -matrices and deformations of algebras*. Preliminary report. (363) **Georgia Benkart**, University of Wisconsin, and **Sarah Witherspoon***, Texas A&M University (1001-16-169)
- 5:30PM *The affine Birman-Wenzl-Murakami algebras and tangles in the solid torus*. (364) **Frederick M. Goodman*** and **Holly Hauschild**, University of Iowa (1001-16-387)

Special Session on Modern Schubert Calculus, IV

3:00 PM – 5:20 PM Room G 44, Donald P. Jacobs Center

Organizers: **Ezra Miller**, University of Minnesota
Frank Sottile, Texas A&M University

- 3:00PM *Eigenvalue problems and a new product in the cohomology of flag varieties*. (365) **Prakash Belkale***, Department of Mathematics UNC, Chapel Hill, North Carolina, USA., and **Shrawan Kumar**, Department of Mathematics, UNC Chapel Hill. (1001-14-295)
- 3:30PM *A Horn-type Recursion for Minuscule Schubert Calculus*. Preliminary report. (366) **Kevin Purbhoo***, Fields Institute, and **Frank Sottile**, Texas A&M University (1001-14-147)
- 4:00PM *Equivariant Quantum Schubert Calculus*. (367) **Leonardo Constantin Mihalcea**, University of Michigan (1001-14-109)
- 4:30PM *A New Combinatorial Model for the Equivariant K -theory of G/P* . (368) **Cristian P. Lenart**, State University of New York at Albany (1001-22-53)
- 5:00PM *Degrees of Schubert varieties*. (369) **Alexander Postnikov**, MIT (1001-05-383)

Special Session on Representation Theory of Reductive Groups, IV

3:00 PM – 4:50 PM Room LG 66, Technological Institute

Organizers: **Jeffrey D. Adler**, University of Akron
Ju-Lee Kim, University of Illinois at Chicago

- 3:00PM *A construction of primitive ideals in enveloping algebras by explicit generators*. (370) **Victor Protsak**, Department of Mathematics, University of Oklahoma (1001-17-319)
- 3:30PM *Jacquet modules for p -adic general linear groups*. (371) **Chris S. Jantzen**, East Carolina University (1001-22-46)
- 4:00PM *Supercuspidal characters of SL_ℓ over a p -adic field, ℓ a prime*. (372) **Loren R Spice**, University of Michigan (1001-22-116)
- 4:30PM *On the local constancy of characters*. Preliminary report. (373) **Jonathan Korman**, Univ. of Toronto, Math. Dept. (1001-22-63)

Special Session on Low-Dimensional Topology and Kleinian Groups, IV

3:00 PM – 5:50 PM Room LG 76, Technological Institute

Organizers: **Ian Agol**, University of Illinois at Chicago
John Holt, University of Illinois at Chicago
Saul Schleimer, University of Illinois at Chicago

- 3:00PM *Heegaard surfaces and measured laminations*. (374) **Tao Li**, Oklahoma State University (1001-57-292)
- 3:30PM *A combination theorem for Veech subgroups of the mapping class group*. Preliminary report. (375) **Christopher J. Leininger***, Columbia University, and **Alan W. Reid**, University of Texas at Austin (1001-51-198)
- 4:00PM *Representation-volume rigidity for hyperbolic manifolds*. (376) **Ben Klaff**, University of Texas at Austin (1001-57-329)
- 4:30PM *Geometric tameness in word-hyperbolic closed three-manifold groups*. (377) **Joshua B Barnard**, University of Oklahoma (1001-57-388)
- 5:00PM *Teichmüller geodesics and Lines of Minima*. (378) **Kasra Rafi***, University of California Santa Barbara, **Caroline Series**, University of Warwick, and **Young-Eun Choi** (1001-00-431)
- 5:30PM *The Heegaard genus of a union of small manifolds*. (379) **Eric Sedgwick***, DePaul University, **David Bachman**, Pitzer College, and **Saul Schleimer**, Rutgers University (1001-57-369)

Special Session on Special Functions, Orthogonal Polynomials, and their Applications, IV

3:00 PM – 4:25 PM Room L 158, Technological Institute

Organizers: **George Gasper**, Northwestern University
Ahmed I. Zayed, DePaul University

- 3:00PM *Second-order superintegrable systems on conformally flat spaces*. (380) **Willard Miller**, School of Mathematics, University of Minnesota (1001-33-96)
- 3:30PM *The coexistence problem for the Heun equation*. (381) **Hans W Volkmer**, University of Wisconsin-Milwaukee (1001-33-217)
- 4:00PM *A nonlinear differential equation satisfied by modular forms with level 2*. (382) **Heekyoung Hahn**, University of Rochester (1001-33-193)

Special Session on Mathematical Techniques in Musical Analysis, IV

3:00 PM – 5:40 PM Auditorium, Technological Institute

Organizers: **Judith Baxter**, University of Illinois at Chicago
Richard Cohn, University of Chicago
Robert Peck, Louisiana State University

3:00PM *Towards a Meta-Physics of the Musical Mind: Canonical Formulation of Weber/Fechner's Law in Application to Tonal Music.*
 (383) **Thomas Noll**, Technical University of Berlin (1001-22-359)

4:00PM *Toward a General Theory of Key Signatures and Enharmonic Equivalence.*
 (384) **Julian Hook**, Indiana University (1001-00-84)

5:00PM *Piano technique and permutation groups.*
 (385) Preliminary report.
Lucian B. Zidaru* and **Robert W. Peck**, Louisiana State University (1001-20-413)

Special Session on Hopf Algebras at the Crossroads of Algebra, Category Theory, and Topology, IV

3:00 PM – 5:20 PM Room G 45, Donald P. Jacobs Center

Organizers: **Louis H. Kauffman**, University of Illinois at Chicago
David E. Radford, University of Illinois at Chicago
Fernando J. O. Souza, University of Iowa

3:00PM *Hopf algebras at the crossroads: mathematical structure in quantum fields.* Preliminary report.
 (386) **Dirk Kreimer**, CNRS-IHES and Center for Math.Phys., Boston Univ. (1001-81-102)

3:30PM *Representations of the Poincare 2-Group.*
 (387) **Louis Crane**, Kansas State University (1001-18-215)

4:00PM *Groupoid-enriched groupoid category, Frobenius algebra, and relativity.* Preliminary report.
 (388) **Zbigniew Oziewicz**, Universidad Nacional Autonoma de Mexico, Facultad de Estudios Superiores Cuautitlan (1001-18-160)

4:30PM *On the Tensor Product of an Oriented Quantum Algebra with Itself.* Preliminary report.
 (389) **David E. Radford**, University of Illinois at Chicago (1001-16-384)

5:00PM *Quantum Invariants of Virtual Knots and Links.*
 (390) Preliminary report.
Louis H Kauffman, University of Illinois at Chicago (1001-57-286)

Special Session on Extremal Combinatorics, IV

3:00 PM – 3:50 PM Room G 36, Donald P. Jacobs Center

Organizers: **Dhruv Mubayi**, University of Illinois at Chicago
Yi Zhao, University of Illinois at Chicago

3:00PM *Random geometric graph diameter threshold in the unit disk.* Preliminary report.
 (391) **Robert B. Ellis***, Texas A&M University, **Xingde Jia**, Texas State University-San Marcos, **Jeremy L. Martin**, University of Minnesota, and **Catherine H. Yan**, Texas A&M University (1001-05-391)

3:30PM *On the abelian sandpile model.*
 (392) **Evelin Toumpakari**, Department of Mathematics, University of Chicago (1001-05-403)

Special Session on Fluid Dynamics, Diffusion and Reaction, IV

3:00 PM – 5:50 PM Room M 177, Technological Institute

Organizers: **Peter S. Constantin**, University of Chicago
Leonid V. Ryzhik, University of Chicago

3:00PM *Travelling fronts in a Boussinesq system.*
 (393) **Henri Berestycki**, EHESS (1001-35-312)

4:00PM *Advection-diffusion for cellular flows at high Peclet number.*
 (394) **Alexei Novikov***, Penn State University, **George Papanicolaou**, Stanford University, and **Lenya Ryzhik**, University of Chicago (1001-76-233)

5:00PM *Quenching and Propagation of Combustion Without Ignition Temperature Cutoff.*
 (395) **Andrej Zlatos**, University of Wisconsin - Madison (1001-35-390)

Special Session on Codes and Applications, IV

3:00 PM – 5:50 PM Room G 42, Donald P. Jacobs Center

Organizers: **William C. Huffman**, Loyola University of Chicago
Vera S. Pless, University of Illinois at Chicago

3:00PM *On Some Graph Theoretic Properties of LDPC Codes.*
 (396) **Hossein Pishro-Nik*** and **Faramarz Fekri**, Georgia Institute of Technology (1001-05-252)

3:30PM *Codes on graphs and hypergraphs.*
 (397) **Alexander Barg**, University of Maryland (1001-94-426)

4:00PM *Pseudocodewords, cycle codes, and the edge zeta function of graphs.* Preliminary report.
 (398) **Ralf Koetter***, University of Illinois at Urbana-Champaign, **Wen-Ching W Li**, Pennsylvania State University, **Pascal O. Vontobel**, University of Wisconsin, and **Judy L. Walker**, University of Nebraska (1001-94-414)

4:30PM *LDPC codes obtained from quadratic surfaces of finite projective spaces.* Preliminary report.
 (399) **Keith E Mellinger***, **Amanda Passmore** and **Jennifer Stovall**, University of Mary Washington (1001-94-39)

5:00PM *Problems in Combinatorial and Number Theory Related to LDPC Code Construction.*
 (400) **Olgica Milenkovic**, ECE Department, University of Colorado, Boulder (1001-94-264)

5:30PM *Results on Finite-Field Wavelets and Their Applications to Error Correcting Codes.*
 (401) **Faramarz Fekri***, **Farshid Delgosha** and **Mina Sartipi**, School of ECE, Georgia Institute of Technology (1001-94-360)

Special Session on Nonlinear Partial Differential Equations and Applications, IV

3:00 PM – 4:55 PM Room L R3, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Mikhail Feldman, University of Wisconsin at Madison

- 3:00PM *The phase transition between chiral nematic and smectic liquid crystals.*
(402) **Daniel Phillips***, Purdue University, Department of Mathematics, and **Sookyung Joo**, Institute for Mathematics and its Applications (IMA), University of Minnesota (1001-35-167)
- 3:30PM *Stability of undercompressive shock profiles.*
(403) **Peter Howard**, Texas A. and M., and **Kevin Zumbrun***, Indiana University, Bloomington (1001-35-126)
- 4:00PM *Structural properties of viscoelasticity and convergence to polyconvex elastodynamics.*
(404) **Corrado Lattanzio**, Università de L'Aquila, and **Athanasios E. Tzavaras***, University of Wisconsin (1001-35-224)
- 4:30PM *Critical Thresholds in Hyperbolic Balance Laws.*
(405) **Hailiang Liu**, Iowa State University (1001-35-277)

Special Session on Geometric Partial Differential Equations, III

3:00 PM – 5:25 PM Room L R5, Technological Institute

Organizers: **Gui-Qiang Chen**, Northwestern University
Jared Wunsch, Northwestern University

- 3:00PM *The Calderón problem with partial data.*
(406) **Gunther Uhlmann**, University of Washington (1001-35-115)
- 3:30PM *Support Theorems For Generalizations of Radon Transforms and Inverse Problems.*
(407) **Antonio C Sa Barreto**, Purdue University (1001-35-317)
- 4:00PM *Picard modular groups in complex hyperbolic spaces.* Preliminary report.
(408) **Gabor Francsics**, Michigan State University (1001-35-318)
- 4:30PM *Integral geometry of tensor fields and the boundary rigidity problem.*
(409) **Plamen Stefanov***, Purdue University, and **Gunther Uhlmann**, University of Washington (1001-53-71)
- 5:00PM *Harmonic Solutions to Some Fully Nonlinear Second Order PDEs on \mathbb{R}^2 .*
(410) **Joseph L Shomberg**, University of Wisconsin - Milwaukee (1001-35-411)

Special Session on Computability Theory and Applications, IV

3:00 PM – 5:50 PM Room G 03, Donald P. Jacobs Center

Organizers: **Robert I. Soare**, University of Chicago
Denis R. Hirschfeldt, University of Chicago

- 3:00PM *The low_n and low_m r.e. degrees are not elementarily equivalent.*
(411) **Richard A. Shore**, Cornell University (1001-03-66)
- 3:30PM *Minimal wtt degrees and computably enumerable Turing degrees.* Preliminary report.
(412) **Reed Solomon***, University of Connecticut, and **Rodney Downey**, Victoria University at Wellington (1001-03-122)
- 4:00PM *Improving and Proving the Slaman-Woodin Conjecture.*
(413) **Peter Cholak***, University of Notre Dame, **Rod Downey**, Victoria University (of Wellington, New Zealand), and **Leo Harrington**, UC-Berkeley (1001-03-118)

- 4:30PM *Spectra of relations on the random graph.*
(414) **Valentina Harizanov**, George Washington University, and **Russell Miller***, Queens College – C.U.N.Y. (1001-03-218)
- 5:00PM *Embedding and Coding Below a 1-Generic Degree.*
(415) **Noam Greenberg***, University of Notre Dame, and **Antonio Montalban**, Cornell University (1001-03-67)
- 5:30PM *Computably Enumerable Algebras, Their Expansions, and Isomorphisms.*
(416) **Bakhadyr Khossainov***, The University of Auckland, New Zealand, **Steffen Lempp**, The University of Wisconsin-Madison, and **Theodore A Slaman**, Berkeley (1001-03-283)

Special Session on Solving Polynomial Systems, IV

3:00 PM – 5:50 PM Room G 43, Donald P. Jacobs Center

Organizers: **Anton Leykin**, University of Illinois at Chicago
Jan Verschelde, University of Illinois at Chicago

- 3:00PM *Genetic Algorithms for zero-dimensional ideals.*
(417) **Ilias S. Kotsireas**, Assistant Professor, Wilfrid Laurier University (1001-14-221)
- 3:30PM *Toric residues and partitions of polytopes.*
(418) **Amit Khetan** and **Ivan Soprounov***, University of Massachusetts, Amherst (1001-14-258)
- 4:00PM Break
- 4:30PM *Approximate GCD and Factorization of Multivariate Polynomials.*
(419) **Zhonggang Zeng**, Northeastern Illinois University (1001-65-232)
- 5:00PM *Solving Multivariate Polynomial Systems.*
(420) **Hong Zhang**, Illinois Institute of Technology and Argonne National Laboratory (1001-65-146)
- 5:30PM *Numerical Jet Geometry of Partial Differential Equations.* Preliminary report.
(421) **Greg J. Reid**, University of Western Ontario (1001-35-207)

Susan J. Friedlander
Associate Secretary
Chicago, Illinois