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# Program of the Sessions

Boston, Massachusetts, October 5–6, 2002

## Saturday, October 5

### Meeting Registration

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7:30 AM – 4:30 PM      Indoor Quad, Mezzanine Level, Curry Student Center

### AMS Exhibit and Book Sale

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7:30 AM – 4:30 PM      Gallery, Mezzanine Level, Curry Student Center

### Special Session on Number Theory and Arithmetic Geometry, I

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8:00 AM – 10:50 AM      Room to be announced, Dodge Hall

Organizers: **Matthew A. Papanikolas**, Brown University  
**Siman Wong**, University of Massachusetts, Amherst

- 8:00AM (1) *Speculations on the ranks of elliptic curves.* Preliminary report.  
**Douglas Ulmer**, University of Arizona (979-11-49)
- 8:30AM (2) *An extension of the Fontaine-Mazur Conjecture.*  
**Farshid Hajir**, University of Massachusetts, Amherst (979-11-63)
- 9:00AM (3) *The arithmetic of  $m$ -regular partition functions.* Preliminary report.  
▶ **David K Penniston**, Furman University (979-11-229)
- 9:30AM (4) *Greenberg's conjecture: a non-abelian example.* Preliminary report.  
**William G. McCallum\***, University of Arizona, and **Romyar T. Sharifi**, Harvard University (979-11-201)
- 10:00AM (5) *Weierstrass points on  $X_0(p)$  and supersingular  $j$ -invariants.*  
**Scott Ahlgren**, University of Illinois (979-11-91)

- 10:30AM (6) *Picard modular varieties in positive characteristic.* Preliminary report.  
**Jeffrey D Achter**, Columbia University (979-14-205)

### Special Session on Hilbert Schemes, I

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8:15 AM – 10:50 AM      Room to be announced, Dodge Hall

Organizers: **Mark De Cataldo**, SUNY at Stony Brook  
**Anthony A. Iarrobino**, Northeastern University

- 8:15AM (7) *On Haiman's  $n!$  theorem.* Preliminary report.  
**Stein Arild Strømme**, University of Bergen, Department of Mathematics (979-14-135)
- 9:00AM (8) *The ample cone of the Hilbert scheme of points in the plane and of the Hilbert scheme of space curves.*  
**Gerd Gotzmann**, Rheine, Germany (979-14-31)
- 9:40AM (9) *On the geometry of the parabolic Hilbert schemes.*  
**Takuro Mochizuki**, Osaka City University, Institute for Advanced Study (979-14-29)
- 10:20AM (10) *An application of Hilbert schemes to some enumerative problems.* Preliminary report.  
**Heather J. Russell**, Oklahoma State University (979-14-156)

### Special Session on Developments and Applications in Differential Geometry, I

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8:30 AM – 10:50 AM      Room to be announced, Dodge Hall

Organizers: **Chuu-Lian Terng**, Northeastern University  
**Xiaobo Liu**, University of Notre Dame

- 8:30AM Discussion.
- 9:00AM (11) *Counting Fourier-Mukai Partners of  $K3$  Surfaces.*  
**Bong H Lian**, Brandeis University (979-51-65)
- 9:30AM (12) *Special Lagrangian Submanifolds and Mirror Symmetry.*  
**Sema Salur**, Northwestern University (979-53-237)

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**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 23, 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.

- 10:00AM (13) *Special Lagrangian cones over tori*. Preliminary report.  
**Emma E. Carberry\***, Massachusetts Institute of Technology, and **Ian McIntosh**, University of York (979-53-210)
- 10:30AM (14) *The Camassa-Holm hierarchy,  $r$ -matrix structure, and algebro-geometric solution*. Preliminary report.  
**Darryl D Holm** and **Zhijun Qiao\***, Los Alamos National Laboratory (979-35-19)

**Special Session on Quivers and Their Generalizations, I**

8:30 AM – 10:55 AM Room to be announced, Dodge Hall

Organizers: **Alex Martsinkovsky**, Northeastern University  
**Gordana G. Todorov**, Northeastern University  
**Jerzy M. Weyman**, Northeastern University  
**Andrei V. Zelevinsky**, Northeastern University

- 8:30AM (15) *Quiver varieties and infinite Grassmannians of type A*. Preliminary report.  
**Maxim Vybornov**, MIT (979-14-242)
- 9:10AM (16) *Lie algebras associated to a Dynkin quiver*.  
**Igor Frenkel**, Yale, **Anton Malkin\*** and **Maxim Vybornov**, MIT (979-16-169)
- 9:50AM (17) *Regions of the canonical basis of a quantized enveloping algebra*. Preliminary report.  
**Robert J Marsh\***, University of Leicester, and **Markus Reineke**, BUGH Wuppertal (979-17-34)
- 10:25AM (18) *Standard Monomial Theory for Affine  $SL(n)$* . Preliminary report.  
**V Lakshmibai**, Northeastern University, **Peter Magyar\***, Michigan State University, and **Jerzy Weyman**, Northeastern University (979-14-226)

**Special Session on Recent Developments in the Orbit Method for Real and  $p$ -adic Groups, I**

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Donald R. King**, Northeastern University  
**Alfred G. Noel**, University of Massachusetts, Boston

- 8:30AM (19) *Some tiny unitary representations of indefinite orthogonal groups*. Preliminary report.  
**Anthony W. Knapp**, State University of New York at Stony Brook (979-22-07)
- 9:00AM (20) *Associated varieties and signatures of Hermitian forms*. Preliminary report.  
**David A. Vogan**, MIT (979-22-66)
- 9:30AM Discussion.
- 10:00AM (21) *Admissible nilpotent orbits of  $p$ -adic split exceptional groups*.  
**Monica Nevins**, University of Ottawa (979-22-155)
- 10:30AM (22) *Components of the Springer Fiber and Domino Tableaux*.  
**Thomas Pietraho**, Bowdoin College (979-22-68)

**Special Session on The Mathematics of Water Waves, I**

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Diane Henderson**, Pennsylvania State University  
**Gene Wayne**, Boston University

- 8:30AM (23) *Rigorous approximations of water waves*. Preliminary report.  
**Guido Schneider**, University of Karlsruhe, and **C. Eugene Wayne\***, Boston University (979-35-79)
- 9:00AM (24) *Existence, Analyticity, and Stable Computation of Traveling Water Waves*.  
**David P Nicholls**, University of Notre Dame (979-76-124)
- 9:30AM (25) *Boussinesq models of shallow water waves*. Preliminary report.  
**Min Chen**, University of Central Florida (979-76-234)
- 10:00AM (26) *Higher order corrections to KdV approximations*.  
**J. Douglas Wright**, Boston University (979-35-117)
- 10:30AM (27) *Hamiltonians and long wave expansions for the dynamics of free surfaces and interfaces*.  
**Walter Craig\***, **Philippe Guyenne**, McMaster University, and **Henrik Kalisch**, Lund University (979-76-80)

**Special Session on Convex Geometry, I**

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Daniel A. Klain**, University of Massachusetts, Lowell  
**Elisabeth Werner**, Case Western Reserve University

- 8:30AM (28) *Extremal slabs in the cube and the Laplace transform*.  
**Franck Barthe**, University of Marne-la-Vallee, and **Alexander Koldobsky\***, University of Missouri-Columbia (979-52-30)
- 9:00AM (29) *Volume of Projections of Convex Bodies via Fourier Transform*.  
**Alexander Koldobsky**, **Dmitry Ryabogin**, University of Missouri-Columbia, and **Artem Zvavitch\***, University of Missouri-Columbia (979-52-100)
- 9:30AM (30) *Euclidean sections of direct sums of normed spaces*.  
**A. E. Litvak\***, University of Alberta, and **V. D. Milman**, Tel Aviv University (979-46-130)
- 10:00AM (31) *Coordinate projections of convex bodies*.  
**Mark Rudelson\***, University of Missouri, and **Roman Vershynin**, University of Alberta (979-52-193)
- 10:30AM (32) *Inequalities related to convex bodies and applications*.  
**Yehoram Gordon**, Technion - Israel Institute of Technology (979-52-225)

**Special Session on Modern Schubert Calculus, I**

9:00 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Frank Sottile**, University of Massachusetts, Amherst  
**Christopher T. Woodward**, Rutgers University

- 9:00AM (33) *GKM spaces with non-isolated fixed points*.  
**Victor Guillemin\*** and **Tara S Holm**, MIT (979-14-223)
- 9:30AM (34) *Schur and Schubert polynomials are Thom polynomials*.  
**Richard Rimanyi**, Ohio State University (979-14-90)
- 10:00AM (35) *Schubert Calculus on Bott-Samelson Manifolds*.  
**Rebecca Goldin**, George Mason University (979-53-196)

- 10:30AM *Polynomials associated to Bott-Samelson resolutions and torsion in intersection cohomology.* Preliminary report.  
(36) **Tom Braden**, University of Massachusetts, Amherst (979-14-144)

**Special Session on Ergodic Theory and Dynamical Systems, I**

- 9:00 AM – 10:50 AM **Room to be announced, Dodge Hall**  
Organizers: **Stanley J. Eigen**, Northeastern University  
**Vidhu S. Prasad**, University of Massachusetts, Lowell
- 9:00AM *Rank one mixing actions of discrete Abelian groups.* Preliminary report.  
(37) **Adam Fieldsteel**, Wesleyan University, and **Andrés del Junco\***, University of Toronto (979-28-177)
- 9:30AM *Lower Bounds for Upcrossings of Ergodic Averages.*  
(38) **Sebastian E Ferrando\***, Ryerson University, **Pedro Catuogno** and **Alfredo Gonzalez**, Mar del Plata National University (979-28-122)
- 10:00AM *Local Rigidity of Group Actions.*  
(39) **David M Fisher\***, Lehman College, CUNY, and **G A Margulis**, Yale University (979-37-219)
- 10:30AM *Growth of typical orbits on homogeneous spaces.*  
(40) **Dmitry Y Kleinbock**, Brandeis University (979-37-84)

**Special Session on Singularities in Algebraic and Analytic Geometry, I**

- 9:00 AM – 10:30 AM **Room to be announced, Dodge Hall**  
Organizers: **Terence Gaffney**, Northeastern University  
**David B. Massey**, Northeastern University  
**Caroline Grant Melles**, U. S. Naval Academy
- 9:00AM *Cohen-Macaulay Properties for Groups of Equivalences and Consequences for Properties of Discriminants.*  
(41) **James N Damon**, Univ. North Carolina at Chapel Hill (979-32-176)
- 9:50AM *Computing characteristic classes of projective schemes.*  
(42) **Paolo Aluffi**, Florida State University (979-14-35)

**Special Session on Quantum Information Theory, I**

- 9:00 AM – 10:50 AM **Room to be announced, Dodge Hall**  
Organizers: **Christopher K. King**, Northeastern University  
**Mary Beth Ruskai**, University of Massachusetts, Lowell
- 9:00AM *Entanglement and Quantum Error Correction.*  
▶ (43) **Michael D Westmoreland**, Denison University (979-81-183)
- 9:30AM *Continuous-time quantum error correction.*  
(44) **C S Ahn**, **A C Doherty**, Caltech, and **A J Landahl\***, MIT (979-81-139)
- 10:00AM *Empirically Combining Methods of Quantum Error Correction and Avoidance.*  
(45) **Mark S. Byrd\***, Harvard University, and **Daniel A. Lidar**, University of Toronto (979-81-96)
- 10:30AM *Quantum Dynamical Semigroup Tomography.*  
(46) Preliminary report.  
**Timothy F Havel**, MIT (979-15-81)

**Special Session on The History of Mathematics, I**

- 9:00 AM – 10:50 AM **Room to be announced, Dodge Hall**  
Organizers: **Adrian C. Rice**, Randolph-Macon College  
**Amy E. Shell-Gellasch**, U. S. Military Academy
- 9:00AM *Brought to book: The curious story of Guglielmo Libri.*  
▶ (47) **Adrian Rice**, Randolph-Macon College (979-01-15)
- 9:30AM *200 Years of West Point Mathematics: Profiles of Mathematical Soldiers and Trailblazers.*  
▶ (48) **Chris Arney**, College of Saint Rose (979-01-12)
- 10:00AM *A Medieval Islamic Perspective on Indian Mathematics.*  
▶ (49) **Kim Plofker**, Brown University (979-01-213)
- 10:30AM *Analysis, Synthesis, and Trigonometry: From Pure Geometry to the Exact Sciences in Greece and Medieval Islam.*  
(50) **Glen R Van Brummelen**, Bennington College (979-01-109)

**Special Session on Elliptic Operators on Noncompact Manifolds, I**

- 9:00 AM – 10:50 AM **Room to be announced, Dodge Hall**  
Organizers: **Maxim Braverman**, Northeastern University  
**Victor Nistor**, Pennsylvania State University  
**Mikhail A. Shubin**, Northeastern University
- 9:00AM *Many-body scattering and symmetric spaces.*  
(51) Preliminary report.  
**Rafe Mazzeo**, Stanford University, and **Andras Vasy\***, MIT (979-35-76)
- 9:40AM *Heat Trace and Spectral Asymptotics for Singular Schrodinger Operators.* Preliminary report.  
(52) **Robert C McOwen**, Northeastern University (979-35-131)
- 10:20AM *On the absence of positive eigenvalues of Schrödinger operators.*  
(53) **Alexandru D Ionescu**, University of Wisconsin, Madison (979-42-134)

**Special Session on Geometric Group Theory, I**

- 9:00 AM – 10:50 AM **Room to be announced, Dodge Hall**  
Organizers: **Sean T. Cleary**, City College, CUNY  
**Murray Elder**, Tufts University  
**Jennifer Taback**, University of Albany
- 9:00AM *Birth, death and the braid group.* Preliminary report.  
▶ (54) **Matthew G Brin**, Binghamton University (979-20-137)
- 9:30AM *Finiteness properties of the braided Thompson group.* Preliminary report.  
(55) **M. Brin**, Binghamton University, and **J. Meier\***, Lafayette College (979-20-67)
- 10:00AM *Controlled topology and group theory.*  
▶ (56) **Ross Geoghegan**, Binghamton University (SUNY) (979-57-167)
- 10:30AM *Progress on the  $K(\pi, 1)$ -conjecture for Artin groups.*  
(57) **Ruth M Charney**, Ohio State University (979-20-56)

**Session for Contributed Papers, I**

9:00 AM – 9:55 AM Room to be announced, Dodge Hall

- 9:00AM *More on Randomness and Pseudo-random*  
 ▶ (58) *Numbers: An Historical Review*. Preliminary report.  
**G. Arthur Mihram\***, Princeton, NJ, and **Danielle Mihram**, U. of Southern California (979-01-20)
- 9:15AM *On Critical Trees for  $L(2,1)$ -labelings*.  
 (59) **Denise Sakai Troxell**, Babson College (979-05-46)
- 9:30AM *Criteria for Irrationality of Euler's Constant*.  
 (60) **Jonathan Sondow**, New York, NY (979-11-16)
- 9:45AM *Towards Characterizing Morphisms of High Dimensional Hypersurfaces*.  
 (61) **David C Sheppard**, MIT (979-14-241)

**Invited Address**

11:00 AM – 11:50 AM Ballroom, Curry Student Center

- (62) *Complexity, irrationality, and model theory*.  
**Lou P. van den Dries**, University of Illinois, Urbana-Champaign (979-03-04)

**Invited Address**

1:30 PM – 2:20 PM Ballroom, Curry Student Center

- (63) *Mathematical modelling and experiments on water waves*.  
**Diane Henderson\*** and **Joseph L Hammack**, Pennsylvania State University (979-76-01)

**Special Session on Modern Schubert Calculus, II**

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Frank Sottile**, University of Massachusetts, Amherst  
**Christopher T. Woodward**, Rutgers University

- 2:30PM *Geometric proofs of Horn and Saturation conjectures*.  
 (64) **Prakash Belkale**, University of North Carolina (979-14-102)
- 3:00PM *A Vanshing and a Non-Vanshing Criterion for Schubert Calculus on  $G/B$* . Preliminary report.  
 (65) **Kevin Purbhoo**, U.C. Berkeley (979-00-224)
- 3:30PM *Divided differences and spaces of subwords*.  
 (66) **Catalin Zara**, Yale University (979-05-214)
- 4:00PM *Schubert Calculus over Free Skew-fields*. Preliminary report.  
 ▶ (67) **Vladimir Retakh**, Rutgers University (979-16-138)
- 4:30PM *Degenerating Schubert varieties to unions of toric varieties associated to  $rc$ -graphs*.  
 (68) **Mikhail Kogan\***, Northeastern University, and **Ezra Miller**, MSRI (979-14-187)
- 5:00PM *Positivity of quiver cycles via deformation*. Preliminary report.  
 (69) **Allen Knutson**, UC Berkeley, **Ezra Miller\***, MSRI, and **Mark Shimozono**, Virginia Tech (979-14-233)

**Special Session on Ergodic Theory and Dynamical Systems, II**

2:30 PM – 4:50 PM Room to be announced, Dodge Hall

Organizers: **Stanley J. Eigen**, Northeastern University  
**Vidhu S. Prasad**, University of Massachusetts, Lowell

- 2:30PM *Bounded orbit injections and flow equivalence for minimal  $Z^d$ -actions*. Preliminary report.  
 (70) **Nicholas S Ormes\***, University of Denver, and **Kathleen Madden**, Drew University (979-37-120)
- 3:00PM *The complexity of self affine tiling dynamical systems*. Preliminary report.  
 ▶ (71) **E. Arthur Robinson, Jr.**, The George Washington University (979-37-60)
- 3:30PM *The square of a map, symbolic dynamics, and the Conley index*.  
 (72) **Jim Wiseman**, Swarthmore College (979-37-173)
- 4:00PM *Bounded homeomorphisms of the open annulus*.  
 (73) **David S. Richeson**, Dickinson College (979-58-50)
- 4:30PM *Non-conventional ergodic averages and nilmanifolds*.  
 (74) **Bryna Kra\***, Pennsylvania State University, and **Bernard Host**, University of Marne La Vallee (979-37-17)

**Special Session on Developments and Applications in Differential Geometry, II**

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Chuu-Lian Terng**, Northeastern University  
**Xiaobo Liu**, University of Notre Dame

- 2:30PM *Isoparametric hypersurfaces with four principal curvatures*.  
 (75) **Thomas E. Cecil**, College of the Holy Cross, **Quo-Shin Chi** and **Gary R. Jensen\***, Washington University (979-53-118)
- 3:00PM *Isoparametric hypersurfaces with four principal curvatures by Thomas E. Cecil, Quo-Shin Chi and Gary R. Jensen*.  
 (76) **Thomas E Cecil**, College of the Holy Cross, **Quo-Shin Chi\*** and **Gary R Jensen**, Washington University (979-53-136)
- 3:30PM *Mean curvature flow of symplectic surfaces in Kaehler-Einstein surfaces*.  
 (77) **Jingyi Chen**, University of British Columbia (979-53-212)
- 4:00PM *Timelike Isothermic surfaces in  $\mathbb{R}_j^n$* .  
 (78) **Martin A. Magid**, Wellesley College (979-53-61)
- 4:30PM Discussion.
- 5:00PM Discussion.

**Special Session on Number Theory and Arithmetic Geometry, II**

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Matthew A. Papanikolas**, Brown University  
**Siman Wong**, University of Massachusetts, Amherst

- 2:30PM *Surfaces in  $P^3$  over finite fields*.  
 (79) **J. Felipe Voloch**, Dept. Math., Univ. Texas (979-11-26)
- 3:00PM *An elementary proof that  $abc$  implies Faltings' Theorem*.  
 ▶ (80) **Thomas J Tucker\***, CUNY Graduate Center, and **Andrew Granville**, University of Montreal (979-11-199)
- 3:30PM *Multizeta values for function fields*.  
 (81) **Dinesh S. Thakur**, University of Arizona, Tucson (979-11-99)

- 4:00PM *Modular Form Congruences and Selmer Groups.*  
(82) **William J McGraw\*** and **Ken Ono**, University of Wisconsin (979-11-37)
- 4:30PM *Counting Fontaine-Mazur-like function fields.*  
(83) **Joshua Brandon Holden\***, Rose-Hulman Institute of Technology, and **Jeffrey D. Achter**, Columbia University (979-11-127)
- 5:00PM *Class Groups of Global Function Fields.* Preliminary report.  
(84) **Allison M. Pacelli**, Brown University (979-11-146)

**Special Session on Quivers and Their Generalizations, II**

2:30 PM – 5:25 PM Room to be announced, Dodge Hall

Organizers: **Alex Martsinkovsky**, Northeastern University  
**Gordana G. Todorov**, Northeastern University  
**Jerzy M. Weyman**, Northeastern University  
**Andrei V. Zelevinsky**, Northeastern University

- 2:30PM *Orthogonal and Symplectic Analogues of Determinantal Ideals.* Preliminary report.  
(85) **Stephen Tyler Lovett**, Northeastern University (979-14-191)
- 3:10PM *Semi-invariants for quivers.*  
(86) **Harm Derksen**, University of Michigan, and **Jerzy Weyman\***, Northeastern University (979-13-220)
- 3:45PM *Degeneracy loci formulae for quivers.*  
(87) **Richard Rimanyi**, Ohio State University (979-14-89)
- 4:20PM *Auslander-Reiten components for finite-dimension algebras of strongly unbounded representation type.* Preliminary report.  
(88) **Raymundo Bautista**, Instituto de Matematicas, UNAM (979-16-190)
- 4:55PM Discussion.

**Special Session on Recent Developments in the Orbit Method for Real and  $p$ -adic Groups, II**

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Donald R. King**, Northeastern University  
**Alfred G. Noel**, University of Massachusetts, Boston

- 2:30PM *An order-reversing duality map for conjugacy classes in Lusztig's canonical quotient.* Preliminary report.  
(89) **Pramod N Achar**, University of Chicago (979-22-238)
- 3:00PM *Ideals in the nilradical of a Borel subalgebra.* Preliminary report.  
(90) **Eric N Sommers**, UMass-Amherst (979-17-232)
- 3:30PM Break.
- 4:00PM *Dixmier algebras quantizing classical complex nilpotent orbits.* Preliminary report.  
(91) **Ranee K Brylinski**, Penn State University (979-22-101)
- 4:30PM *The closure ordering of nilpotent orbits of the complex symmetric pair  $(SO_{p+q}, SO_p \times SO_q)$ .*  
(92) **Dragomir Z. Djokovic\*** and **Michael Litvinov**, University of Waterloo (979-22-133)
- 5:00PM *Jordan algebras and spherical low-rank representations.*  
(93) **Alexander Dvorsky\***, University of Miami, and **Siddhartha Sahi**, Rutgers University (979-22-64)

**Special Session on Hilbert Schemes, II**

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Mark De Cataldo**, SUNY at Stony Brook  
**Anthony A. Iarrobino**, Northeastern University

- 2:30PM *Hilbert schemes of points on surfaces: an informal survey.*  
(94) **Mark Andrea A de Cataldo**, SUNY at Stony Brook (979-14-39)
- 3:30PM *The Geometry of Crepant Resolutions of Calabi-Yau Orbifolds.*  
(95) **Anda Degeratu**, Duke University (979-53-194)
- 4:10PM *Orbifold cohomology as periodic cyclic homology.* Preliminary report.  
(96) **Vladimir Baranovsky**, California Institute of Technology (979-14-24)
- 4:50PM *A Mirror Orbifold Product.* Preliminary report.  
(97) **Andrei H. Căldăraru**, University of Pennsylvania (979-14-128)

**Special Session on Quantum Information Theory, II**

2:30 PM – 4:50 PM Room to be announced, Dodge Hall

Organizers: **Christopher K. King**, Northeastern University  
**Mary Beth Ruskai**, University of Massachusetts, Lowell

- 2:30PM *Introduction to bidirectional channels.*  
▶ (98) **Charles A Bennett**, IBM Research, **Aram W Harrow**, MIT, **Debbie W Leung** and **John A Smolin\***, IBM Research (979-81-221)
- 3:00PM *Classical communication with bidirectional channels.*  
▶ (99) **Charles H Bennett**, IBM, **Aram W Harrow\***, MIT, **Debbie W Leung** and **John A Smolin**, IBM (979-81-211)
- 3:30PM *Capacities of quantum bidirectional channels.*  
(100) **Charles H Bennett**, IBM, **Aram W Harrow**, MIT and IBM, **Debbie W Leung\***, IBM and MSRI, and **John A Smolin**, IBM (979-81-182)
- 4:00PM *Entanglement capacity of the Ising and anisotropic Heisenberg interactions.*  
(101) **Andrew M Childs**, MIT Center for Theoretical Physics (979-81-103)
- 4:30PM *Practical High-Speed Quantum Cryptography.*  
(102) **Gerald N Gilbert**, MITRE (979-81-216)

**Special Session on The Mathematics of Water Waves, II**

2:30 PM – 4:50 PM Room to be announced, Dodge Hall

Organizers: **Diane Henderson**, Pennsylvania State University  
**Gene Wayne**, Boston University

- 2:30PM *Stability and instability of periodic plane waves in deep water.*  
(103) **Harvey Segur\***, University of Colorado, **Diane M Henderson**, Pennsylvania State University, and **Katherine Socha**, Michigan State University (979-76-184)
- 3:00PM *Instability of Bounded Solutions of the 2-D Cubic Nolinear Schrödinger Equation.*  
(104) **John Carter**, Seattle University (979-35-186)

3:30PM *Nonlocal perturbations and the stability of stationary solutions of the NLS equation.*  
(105) **Bernard Deconinck\***, Colorado State University, and **J Nathan Kutz**, University of Washington (979-35-78)

4:00PM *Blow-up solutions of the vector nonlinear Schrödinger equation.*  
▶ (106) **James Coleman** and **Catherine Sulem\***, University of Toronto (979-35-171)

4:30PM *Fifth Order Perturbation Solution for Gravity-Capillary Standing Waves in Fluid of Finite Depth.*  
(107) **Sergey Sekerzh-Zenkovich**, Universidad de Guadalajara (979-76-59)

### Special Session on The History of Mathematics, II

2:30 PM – 4:50 PM Room to be announced, Dodge Hall

Organizers: **Adrian C. Rice**, Randolph-Macon College  
**Amy E. Shell-Gellasch**, U. S. Military Academy

2:30PM *The Nodding Sphere and the Bird's Beak: a Vignette from the Euler-d'Alembert Correspondence.*  
▶ (108) **Robert E Bradley**, Adelphi University (979-01-218)

3:00PM *Some connections within Euler's early mathematics.*  
▶ (109) **C Edward Sandifer**, Western Connecticut State U (979-01-106)

3:30PM *Leonhard Euler, Frederick II and the scientific imperative of the Berlin Academy.* Preliminary report.  
▶ (110) **John D. Glaus**, The Euler Society (979-01-25)

4:00PM *Bad Logic, Bad Mathematics: Milton's Justification of the Ways of Number to Man.*  
▶ (111) **Thomas Drucker**, University of Wisconsin-Whitewater (979-01-21)

4:30PM *Mathematics in the thought of Nicholas Cusanus.*  
▶ (112) **Hardy Grant**, York University, Toronto (979-01-105)

### Special Session on Convex Geometry, II

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Daniel A. Klain**, University of Massachusetts, Lowell  
**Elisabeth Werner**, Case Western Reserve University

2:30PM *Problems in Convex Geometry Related to Microlocal Analysis.* Preliminary report.  
(113) **Eric L. Grinberg\***, Temple University, and **Eric Todd Quinto**, Tufts University (979-52-152)

3:00PM *Pure and Applied aspects of Limited Data Tomography.* Preliminary report.  
▶ (114) **Eric Todd Quinto**, Tufts University (979-92-52)

3:30PM *An iterative algorithm for finding  $x \in C \subseteq R^N$  with  $Ax \in Q \subseteq R^M$ , where  $C$  and  $Q$  are closed, convex and  $A$  is linear.*  
▶ (115) **Charles L Byrne**, University of Massachusetts Lowell (979-52-93)

4:00PM *Point X-rays of convex bodies in non-Euclidean spaces.*  
(116) **Paolo Dulio**, Politecnico di Milano, and **Carla Peri\***, Università Cattolica (979-52-140)

4:30PM *Two problems on affine diameters of convex bodies.*  
▶ (117) Preliminary report.  
**Valeriu Soltan**, George Mason University (979-52-44)

5:00PM *Unitarily invariant valuations and complex integral geometry.*  
(118) **Semyon Alesker**, Tel Aviv University & University of Chicago (979-52-88)

### Special Session on Geometric Group Theory, II

2:30 PM – 5:20 PM Room to be announced, Dodge Hall

Organizers: **Sean T. Cleary**, City College, CUNY  
**Murray Elder**, Tufts University  
**Jennifer Taback**, University of Albany

2:30PM *Free decompositions of graphs of free groups.* Preliminary report.  
(119) **Guo-An Diao** and **Mark Feighn\***, Rutgers University-Newark (979-20-62)

3:00PM *Minimal almost convexity.* Preliminary report.  
(120) **Murray Elder**, Tufts University, and **Susan Hermiller\***, University of Nebraska (979-20-53)

3:30PM *Embedding wreath-like products in finitely presented groups.*  
(121) **Gilbert Baumslag**, City College of CUNY (979-20-114)

4:00PM *Approximating word problems of groups.*  
(122) **Robert H Gilman**, Stevens Institute of Technology (979-20-147)

4:30PM *Train track quasigeodesics in mapping class groups.* Preliminary report.  
(123) **Lee Mosher**, Rutgers University, Newark (979-20-51)

5:00PM *Graph homology and Outer space.* Preliminary report.  
(124) **Karen Vogtmann\*** and **Jim Conant**, Cornell University (979-20-141)

### Session for Contributed Papers, II

2:30 PM – 3:40 PM Room to be announced, Dodge Hall

2:30PM *Pure subgroups of locally compact abelian groups.* Preliminary report.  
(125) **Peter Loth**, Sacred Heart University (979-22-55)

2:45PM *On Compact Lattices.*  
(126) **Carmen D Vlad**, Pace University, New York (979-28-72)

3:00PM *Generation and Solution of Equalized terms power differential equations.*  
▶ (127) **Ali A. Salim**, Amman - Jordan (979-34-28)

3:15PM *Rank and Orbit in R Sequences.* Preliminary report.  
(128) **Andrew B Perry**, Springfield College (979-46-188)

3:30PM *The Dependence of Deformation of the Energy-Weighted Sum Rules for the Magnetic Dipole Transitions.* Preliminary report.  
(129) **Mehmet Guner\*** and **Ali Ekber Kuliev**, Sakarya University (979-81-22)

### Special Session on Elliptic Operators on Noncompact Manifolds, II

2:40 PM – 5:10 PM Room to be announced, Dodge Hall

Organizers: **Maxim Braverman**, Northeastern University  
**Victor Nistor**, Pennsylvania State University  
**Mikhail A. Shubin**, Northeastern University

2:40PM *Index theory on foliated spaces and the gap labeling conjecture for quasicrystals.*  
(130) **Jerry Kaminker**, Indiana University Purdue University Indianapolis (979-58-108)

- 3:20PM *From surgery to analysis*. Preliminary report.  
(131) **John Roe**, Penn State University (979-58-164)
- 4:00PM *Amenable approximations of spectral density function*. Preliminary report.  
(132) **Józef Dodziuk\***, Ph.D. Program in Mathematics, Graduate Center, CUNY, and **Varghese Mathai**, University of Adelaide, Adelaide Australia (979-58-150)
- 4:40PM *Quantum Unique Ergodicity*.  
(133) **Harold G Donnelly**, Purdue University (979-58-33)

**Special Session on Singularities in Algebraic and Analytic Geometry, II**

2:45 PM – 4:55 PM Room to be announced, Dodge Hall

Organizers: **Terence Gaffney**, Northeastern University  
**David B. Massey**, Northeastern University  
**Caroline Grant Melles**, U. S. Naval Academy

- 2:45PM *Topological structure of complex hypersurfaces of dimension 2*. Preliminary report.  
(134) **Dung Trang Le**, Universite de Provence (979-14-125)
- 3:35PM *The Denef-Loeser series for toric surface singularities*.  
(135) **Monique H Lejeune-Jalabert\***, CNRS LAMA Univ. Versailles St Quentin, and **Ana J Reguera**, Dpto. Algebra y Geometria Univ. Valladolid (979-14-27)
- 4:15PM *On local uniformization in arbitrary characteristic*.  
(136) **Franz-Viktor Kuhlmann**, University of Saskatchewan (979-14-32)

**Invited Address**

5:30 PM – 6:20 PM Ballroom, Curry Student Center

- (137) *Solving universal equations in Gromov-Witten invariants*.  
**Xiaobo Liu**, University of Notre Dame (979-53-03)

**Sunday, October 6**

**Meeting Registration**

8:00 AM – NOON Indoor Quad, Mezzanine Level, Curry Student Center

**AMS Exhibit and Book Sale**

8:00 AM – NOON Gallery, Mezzanine Level, Curry Student Center

**Special Session on Quivers and Their Generalizations, III**

8:00 AM – NOON Room to be announced, Dodge Hall

Organizers: **Alex Martsinkovsky**, Northeastern University  
**Gordana G. Todorov**, Northeastern University  
**Jerzy M. Weyman**, Northeastern University  
**Andrei V. Zelevinsky**, Northeastern University

- 8:00AM *Weak Morita Duality*.  
(138) **Robert R Colby** and **Kent R Fuller\***, University of Iowa (979-16-47)

- 8:35AM Discussion.
- 9:10AM *Hochschild cohomology rings, support varieties, and finite generation*. Preliminary report.  
(139) **E L Green\***, Virginia Tech, **Nicole Snashall**, University of Leicester, and **Oyvind Solberg**, NTNU (979-16-23)
- 9:45AM *Cotorsion rings*.  
(140) **Pedro Antonio Guil Asensio**, Universidad de Murcia, and **Ivo Herzog\***, The Ohio State University at Lima (979-16-111)
- 10:20AM *A grading on the preprojective algebra of a locally finite quiver*.  
▶ (141) **Mark Kleiner**, Syracuse University (979-16-73)

**Special Session on Hilbert Schemes, III**

8:15 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Mark De Cataldo**, SUNY at Stony Brook  
**Anthony A. Iarrobino**, Northeastern University

- 8:15AM *Rational Cherednik Algebras and Differential Operators on Varieties of Quasi-Invariants*.  
(142) **Yuri Berest\***, Cornell University, **Pavel Etingof**, Massachusetts Institute of Technology, and **Victor Ginzburg**, University of Chicago (979-16-231)
- 9:00AM *Finite dimensional representations of the rational Cherednik algebra*.  
(143) **Yuri Berest**, Cornell University, **Pavel Etingof\***, MIT, and **Victor Ginzburg**, University of Chicago (979-16-197)
- 9:40AM *Symmetric products, Symmetric group Frobenius algebras and Discrete Torsion*.  
(144) **Ralph M Kaufmann**, Oklahoma State University, Stillwater, OK and Max-Planck-Institut fuer Mathematik, Bonn, Germany (979-14-123)
- 10:20AM *An elementary construction of an open affine covering of the Hilbert scheme of points of an affine space*. Preliminary report.  
(145) **Mark E Huibregtse**, Skidmore College (979-14-230)

**Special Session on Ergodic Theory and Dynamical Systems, III**

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Stanley J. Eigen**, Northeastern University  
**Vidhu S. Prasad**, University of Massachusetts, Lowell

- 8:30AM *Dynamics of McMullen's Root-Finding Algorithm for cubic polynomials*.  
▶ (146) **Jane M. Hawkins**, University of North Carolina at Chapel Hill (979-37-41)
- 9:00AM *Parameter space of the Weierstrass elliptic function*. Preliminary report.  
(147) **Jane Hawkins**, University of North Carolina at Chapel Hill, and **Lorelei Koss\***, Dickinson College (979-37-189)
- 9:30AM *The Dynamics of Quadratic One-Dimensional Continuous Cellular Automata*.  
▶ (148) **Randall E Rausch**, University of Texas at Dallas (979-37-181)

## Program of the Sessions – Boston, MA, Sunday, October 6 (cont'd.)

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- 10:00AM *Asymptotic Behaviour of Measures with Long Range Correlations under the Action of Cellular Automata.* Preliminary report.  
(149) **Reem Yassawi\*** and **Marcus Pivato**, Trent University (979-37-204)
- 10:30AM *Dimension of hyperbolic sets computed from stable and unstable slices.*  
(150) **Boris Hasselblatt\***, Tufts University, and **Joerg Schmeling**, Lunds Universitet (979-37-48)

### Special Session on Developments and Applications in Differential Geometry, III

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Chuu-Lian Terng**, Northeastern University  
**Xiaobo Liu**, University of Notre Dame

- 8:30AM Discussion.
- 9:00AM *Painlevé Expansions, Cohomogeneity One Metrics, and Exceptional Holonomy.*  
(151) **A. Dancer**, Oxford University, and **M. Wang\***, McMaster University (979-53-153)
- 9:30AM *Some fully nonlinear equations in conformal geometry.*  
(152) **Jeff A Viaclovsky**, MIT (979-53-207)
- 10:00AM *The Gromov-Hausdorff Stability of the Spacelike Friedman Model.*  
(153) **Christina Sormani**, Lehman College, CUNY (979-58-85)
- 10:30AM *The minimal marked length spectrum of Riemannian two-step nilmanifolds.* Preliminary report.  
(154) **Ruth Gornet**, University of Texas at Arlington, and **Maura B Mast\***, University of Massachusetts Boston (979-53-235)

### Special Session on Number Theory and Arithmetic Geometry, III

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Matthew A. Papanikolas**, Brown University  
**Siman Wong**, University of Massachusetts, Amherst

- 8:00AM Discussion.
- 8:30AM *Recent progress on families of twisted L-functions.* Preliminary report.  
(155) **Solomon Friedberg**, Boston College (979-11-45)
- 9:00AM *Nonholomorphic cocyclic Eisenstein series.* Preliminary report.  
(156) **Gautam Chinta\***, Brown University, and **Cormac O'Sullivan**, CUNY (979-11-126)
- 9:30AM *Can a Drinfeld module be modular?*  
(157) **David M Goss**, Ohio State University (979-11-40)
- 10:00AM *Newton polygons of wildly ramified curves.* Preliminary report.  
(158) **Rachel J. Pries**, Columbia University (979-11-129)
- 10:30AM *Algebraic independence of the divided derivatives of the Carlitz modules.* Preliminary report.  
▶ (159) **W. Dale Brownawell\***, Penn State, and **Alfred J. van der Poorten**, Macquarie University (979-11-170)

### Special Session on Recent Developments in the Orbit Method for Real and p-adic Groups, III

8:30 AM – 10:20 AM Room to be announced, Dodge Hall

Organizers: **Donald R. King**, Northeastern University

**Alfred G. Noel**, University of Massachusetts, Boston

- 8:30AM *Complexity of Nilpotent Orbits and the Kostant-Sekiguchi Correspondence.* Preliminary report.  
(160) **Donald R. King**, Northeastern University (979-22-42)
- 9:00AM *Triangularity results for characteristic cycles.* Preliminary report.  
(161) **Peter E Trapa**, University of Utah (979-22-158)
- 9:30AM Discussion.
- 10:00AM Discussion.

### Special Session on The History of Mathematics, III

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Adrian C. Rice**, Randolph-Macon College  
**Amy E. Shell-Gellasch**, U. S. Military Academy

- 8:30AM *Taylor's Theorem: A historical link between discrete and continuous mathematics.* Preliminary report.  
▶ (162) **Dick Jardine**, Keene State College (979-01-115)
- 9:00AM *A Jacobian School in Mathematics?* Preliminary report.  
▶ (163) **Tom Archibald**, Acadia University (979-01-54)
- 9:30AM *Kinematic space in special relativity.* Preliminary report.  
▶ (164) **Paul R Wolfson**, West Chester University of PA (979-01-38)
- 10:00AM *The Evolution of American Geometry Education, 1750-1950.* Preliminary report.  
▶ (165) **Amy Ackerberg-Hastings**, Rockville, MD (979-01-09)
- 10:30AM *Old Books and Hidden Gems.* Preliminary report.  
▶ (166) **Amy Shell-Gellasch**, United States Military Academy (979-01-11)

### Special Session on Convex Geometry, III

8:30 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Daniel A. Klain**, University of Massachusetts, Lowell  
**Elisabeth Werner**, Case Western Reserve University

- 8:30AM *Directed Projection Functions.* Preliminary report.  
(167) **Paul Goodey\***, University of Oklahoma, and **Wolfgang Weil**, Universität Karlsruhe (979-52-198)
- 9:00AM *A regularity theorem for support functions of convex bodies.*  
(168) **Ralph Howard**, University of South Carolina (979-52-116)
- 9:30AM *Smoothing Convex Polytopes.*  
▶ (169) **Mohammad Ghomi**, University of South Carolina (979-53-157)
- 10:00AM *Convex bodies: metrics and dimension.* Preliminary report.  
(170) **R A Vitale**, University of Connecticut (979-52-70)
- 10:30AM *On directly additive selectors for convex and star bodies.*  
(171) **Maria Moszyńska**, Warsaw University (979-52-36)

### Special Session on Modern Schubert Calculus, III

9:00 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Frank Sottile**, University of Massachusetts, Amherst

**Christopher T. Woodward**, Rutgers University

- 9:00AM (172) *A Schubert calculus recurrence from the noncomplex  $W$ -action on  $G/B$ .*  
**Allen Knutson**, UC Berkeley (979-05-236)
- 9:30AM (173) *Grothendieck Polynomials via Permutation Patterns and Chains in the Bruhat Order.*  
**Cristian Lenart**, State University of New York at Albany, **Shawn Robinson\***, Rutgers University, and **Frank Sottile**, University of Massachusetts (979-05-143)
- 10:00AM (174) *Computational aspects of Schubert Calculus.* Preliminary report.  
**Alexander Yong**, University of Michigan, Ann Arbor (979-05-161)
- 10:30AM (175) *Multiplication Formulas in the Grothendieck Ring of a Flag Variety.*  
**Cristian P. Lenart**, SUNY Albany (979-14-178)

**Special Session on Singularities in Algebraic and Analytic Geometry, III**

9:00 AM – 10:30 AM Room to be announced, Dodge Hall

Organizers: **Terence Gaffney**, Northeastern University  
**David B. Massey**, Northeastern University  
**Caroline Grant Melles**, U. S. Naval Academy

- 9:00AM (176) *Equisingularity of sections,  $t^r$  condition, and the integral closure of modules.* Preliminary report.  
**Terence Gaffney**, Northeastern University, **David Trotman**, Universite de Provence, and **Leslie Wilson\***, University of Hawai'i (979-32-97)
- 9:50AM (177) *Equisingularity and the multiplicity of a pair of modules.*  
**Terence Gaffney**, Northeastern University (979-32-75)

**Special Session on Quantum Information Theory, III**

9:00 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Christopher K. King**, Northeastern University  
**Mary Beth Ruskai**, University of Massachusetts, Lowell

- 9:00AM (178) *Exponential speedup via quantum random walk.*  
**Sam Gutmann**, Northeastern University (979-81-121)
- 9:30AM (179) *Conditions for Equality in the Strong Subadditivity Inequality.*  
**Andreas Winter\***, University of Bristol, **Patrick Hayde**, Institution for Quantum Information, Caltech, and **Richard Jozsa**, University of Bristol (979-94-87)
- 10:00AM (180) *Quantum Channels with Limited Access.*  
**Neal G. Anderson**, University of Massachusetts at Amherst (979-81-185)
- 10:30AM (181) *The communication cost of entanglement transformations.* Preliminary report.  
**Patrick Hayden\***, **Sumit Daftuar**, California Institute of Technology, and **Andreas Winter**, University of Bristol (979-81-243)

**Special Session on Elliptic Operators on Noncompact Manifolds, III**

9:00 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Maxim Braverman**, Northeastern University  
**Victor Nistor**, Pennsylvania State University  
**Mikhail A. Shubin**, Northeastern University

- 9:00AM (182) *The density of states of a periodic media in a large coupling limit.*  
**Leonid Friedlander**, University of Arizona (979-35-175)
- 9:40AM (183) *Adiabatic decompositions formulas for the zeta-determinant of the Dirac Laplacian.* Preliminary report.  
**Krzysztof P Wojciechowski**, IUPUI (979-58-112)
- 10:20AM (184) *On complete Ricci-flat metrics.*  
**Gang Tian**, MIT (979-53-192)

**Special Session on Geometric Group Theory, III**

9:00 AM – 10:50 AM Room to be announced, Dodge Hall

Organizers: **Sean T. Cleary**, City College, CUNY  
**Murray Elder**, Tufts University  
**Jennifer Taback**, University of Albany

- 9:00AM (185) *The girth of groups and quasi-isometry.* Preliminary report.  
**Azer Akhmedov**, Yale University (979-20-107)
- 9:30AM (186) *Trivializations of group presentations and the Andrews-Curtis conjecture.* Preliminary report.  
**Andrew Casson**, Yale University (979-20-203)
- 10:00AM (187) *The gallery length filling function for finite presentations of groups.* Preliminary report.  
**Tim R Riley\***, Yale University, and **Steve M Gersten**, University of Utah (979-20-154)
- 10:30AM (188) *Approximating  $CAT(0)$  geodesics by Cayley graph geodesics.* Preliminary report.  
**Kim E. Ruane**, Tufts University (979-20-168)

**AMS Special Presentation: Part I**

9:30 AM – 10:50 AM Room to be announced, Dodge Hall

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

**Invited Address**

11:00 AM – 11:50 AM Ballroom, Curry Student Center

- (189) *Information capacity of quantum channels.*  
**Christopher K. King**, Northeastern University (979-81-02)

**Erdős Memorial Lecture**

1:00 PM – 1:50 PM Ballroom, Curry Student Center

- (190) *The conjecture of Erdős-Turan and its impact on ergodic theory.*  
**Hillel Furstenberg**, Einstein Institute of Mathematics (979-05-05)

**Special Session on Modern Schubert Calculus, IV**

2:00 PM – 4:50 PM Room to be announced, Dodge Hall

Organizers: **Frank Sottile**, University of Massachusetts, Amherst  
**Christopher T. Woodward**, Rutgers University

- 2:00PM *Polynomial representatives of Schubert classes in  $QH^*(G/B)$ .* (191)  
**Liviu Mare**, University of Toronto (979-22-162)
- 2:30PM *A Pieri formula for universal Schubert polynomials.* (192)  
**Linda Chen**, Columbia University (979-14-217)
- 3:00PM *The Peterson variety and total positivity.* (193)  
**Konstanze Rietsch**, King's College London (979-22-145)
- 3:30PM *Symmetries in quantum Schubert calculus.* (194)  
**Harald Hengelbrock**, Ruhr-Universitaet Bochum (979-05-160)
- 4:00PM *Quantum Bruhat graph and Schubert polynomials.* (195)  
**Alexander Postnikov**, MIT (979-05-240)
- 4:30PM *Gromov-Witten invariants on Grassmannians.* (196)  
**Harry Tamvakis**, Brandeis University (979-14-174)

**Special Session on Ergodic Theory and Dynamical Systems, IV**

2:00 AM – 4:20 PM Room to be announced, Dodge Hall

Organizers: **Stanley J. Eigen**, Northeastern University  
**Vidhu S. Prasad**, University of Massachusetts, Lowell

- 2:00PM *Properties of Topological Entropy which Characterize it.* Preliminary report.  
**Ethan M. Coven**, Wesleyan University (979-37-18)
- 2:30PM *Entropy Points, Expansiveness and Symbolic Dynamics.* Preliminary report.  
**Doris Fiebig**, **Ulf Rainer Fiebig**, Goettingen, Germany, and **Zbigniew H Nitecki\***, Tufts University (979-37-14)
- 3:00PM *On weak mixing and multiple recurrence for infinite measure-preserving transformations.* Preliminary report.  
**Cesar E Silva**, Williams College (979-37-222)
- 3:30PM *Distributions of Special One-dependent Measures.* (200)  
**Jorge E Navarro**, University of Texas-Brownsville (979-37-149)
- 4:00PM *Complementing subsets of the integers and a conjecture of Yuji Ito.* (201)  
**Stanley J. Eigen**, Northeastern University (979-37-206)

**Special Session on Number Theory and Arithmetic Geometry, IV**

2:00 PM – 4:20 PM Room to be announced, Dodge Hall

Organizers: **Matthew A. Papanikolas**, Brown University  
**Siman Wong**, University of Massachusetts, Amherst

- 2:00PM *p-adic rigidity of arithmetic cohomology.* (202) Preliminary report.  
**Avner Ash**, Boston College (979-11-10)
- 2:30PM *Cusp singularities and special values of L-functions.* (203)  
**Paul E. Gunnells\***, UMass Amherst, **Jacob Sturm** and **Robert Sczech**, Rutgers University, Newark (979-11-148)

- 3:00PM *1-Motives and Iwasawa Theory.* Preliminary report.  
**Cristian D. Popescu**, Johns Hopkins University (979-11-163)
- 3:30PM *Adequate equivalence relations and cycles on abelian varieties.* Preliminary report.  
**Reza Akhtar**, Miami University (979-14-179)
- 4:00PM *Optimal curves and their j-invariants.* (206)  
**Mihran Papikian**, University of Michigan (979-11-98)

**Special Session on Quivers and Their Generalizations, IV**

2:00 PM – 5:10 PM Room to be announced, Dodge Hall

Organizers: **Alex Martsinkovsky**, Northeastern University  
**Gordana G. Todorov**, Northeastern University  
**Jerzy M. Weyman**, Northeastern University  
**Andrei V. Zelevinsky**, Northeastern University

- 2:00PM *Cotilting modules for tame quivers.* (207)  
**Henning Krause**, University of Bielefeld (979-16-113)
- 2:40PM *Koszul algebras and sheaves over projective space.* Preliminary report.  
**Roberto Martinez-Villa**, UNAM (979-16-71)
- 3:20PM *Infinite dimensional representations of canonical algebras.* (209)  
**Idun Reiten\***, NTNU, Norway, and **Claus Michael Ringel**, Universität Bielefeld, Germany (979-16-180)
- 4:00PM *Representations of selfinjective Koszul algebras.* Preliminary report.  
**Dan Zacharia\***, Syracuse University, and **Roberto Martinez-Villa**, UNAM (979-16-74)
- 4:40PM *Direct products of representations and the pure-semisimplicity conjecture.* (211)  
**Birge Huisgen-Zimmermann\***, University of California at Santa Barbara, and **Manuel Saorin**, Universidad de Murcia (979-16-132)

**Special Session on Hilbert Schemes, IV**

2:00 PM – 3:55 PM Room to be announced, Dodge Hall

Organizers: **Mark De Cataldo**, SUNY at Stony Brook  
**Anthony A. Iarrobino**, Northeastern University

- 2:00PM *Auto-equivalences of the derived category of a  $K3$  surface and monodromy of its Hilbert schemes.* (212)  
**Eyal Markman**, University of Massachusetts at Amherst (979-14-166)
- 2:45PM *Hilbert schemes and singular curves on a surface.* Preliminary report.  
**Ragni Piene**, University of Oslo, Norway (979-14-58)
- 3:25PM *Chow motives for semismall maps.* (214)  
**Mark Andrea A de Cataldo\***, SUNY at Stony Brook, and **Luca Migliorini**, University of Bologna (979-14-43)

**Special Session on Quantum Information Theory, IV**

2:00 PM – 3:50 PM Room to be announced, Dodge Hall

Organizers: **Christopher K. King**, Northeastern University

Mary Beth Ruskai, University of Massachusetts, Lowell

- 2:00PM Discussion.
- 2:30PM *Quantum Reverse Shannon Theorem*. Preliminary report.  
 ▶ (215) **Charles H. Bennett**, IBM Research Division (979-94-239)
- 3:00PM *Application of operator space methods to conditional expectation and completely positive maps in  $L_p$  spaces*. Preliminary report.  
 (216) **Marius Junge**, University of Illinois at Urbana-Champaign (979-46-151)
- 3:30PM *Entanglement Breaking Channels*.  
 ▶ (217) **M. Beth Ruskai**, Arlington, MA (979-81-69)

**Special Session on Elliptic Operators on Noncompact Manifolds, IV**

2:00 PM – 3:50 PM Room to be announced, Dodge Hall

Organizers: **Maxim Braverman**, Northeastern University  
**Victor Nistor**, Pennsylvania State University  
**Mikhail A. Shubin**, Northeastern University

- 2:00PM *Adjoints of elliptic cone operators*.  
 (218) **Juan B Gil\*** and **Gerardo A Mendoza**, Temple University (979-35-119)
- 2:40PM *Dirac operators and periodic connections*. Preliminary report.  
 (219) **Marcos Jardim**, University of Pennsylvania (979-58-08)
- 3:20PM *b-holomorphic manifolds*. Preliminary report.  
 (220) **Howard Jacobowitz**, Rutgers University, and **Gerardo A. Mendoza\***, Temple University (979-35-95)

**Special Session on Convex Geometry, IV**

2:00 PM – 4:20 PM Room to be announced, Dodge Hall

Organizers: **Daniel A. Klain**, University of Massachusetts, Lowell  
**Elisabeth Werner**, Case Western Reserve University

- 2:00PM *A local Steiner-type formula for closed sets and applications*. Preliminary report.  
 (221) **Daniel Josef Hug\***, Universität Freiburg, **Günter Last** and **Wolfgang Weil**, Universität Karlsruhe (979-52-159)
- 2:30PM *On the uniqueness of solutions to the discrete  $L_0$ -Minkowski problem in the plane*.  
 (222) **Alina Stancu**, Polytechnic University of New York (979-52-110)
- 3:00PM *On the State of Voronoi's Conjecture on Parallelohedra*. Preliminary report.  
 ▶ (223) **Konstantin Rybnikov**, UMASS Lowell (979-52-142)
- 3:30PM *Volumes of symmetric random polytopes*.  
 (224) **Mark W Meckes**, Case Western Reserve University (979-52-94)
- 4:00PM *Inequalities for mixed volumes and the Minkowski problem for polytopes*.  
 (225) **Daniel A. Klain**, University of Massachusetts Lowell (979-52-227)

**Special Session on Geometric Group Theory, IV**

2:00 PM – 4:20 PM Room to be announced, Dodge Hall

Organizers: **Sean T. Cleary**, City College, CUNY  
**Murray Elder**, Tufts University  
**Jennifer Taback**, University of Albany

- 2:00PM *Sections of projections from a free product to one of its factors*.  
 (226) **Mauricio Gutierrez**, Tufts University (979-20-57)
- 2:30PM *Three Dimensional FC Artin Groups are CAT(0)*. Preliminary report.  
 (227) **Robert W Bell**, The Ohio State University (979-20-215)
- 3:00PM *Properties of relatively hyperbolic groups*.  
 ▶ (228) **Inna Bumagin**, McGill University (979-20-202)
- 3:30PM *Superrigidity for Quasi-isometric Embeddings*. Preliminary report.  
 (229) **David M Fisher\***, Lehman College, and **Kevin Whyte**, University of Illinois, Chicago (979-22-209)
- 4:00PM *Automorphisms of right-angled Coxeter groups*.  
 (230) **Anton Kaul**, Tufts University (979-20-104)

**AMS Special Presentation: Part II**

2:00 PM – 3:30 PM Room to be announced, Dodge Hall

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

**Special Session on Singularities in Algebraic and Analytic Geometry, IV**

2:15 PM – 5:05 PM Room to be announced, Dodge Hall

Organizers: **Terence Gaffney**, Northeastern University  
**David B. Massey**, Northeastern University  
**Caroline Grant Melles**, U. S. Naval Academy

- 2:15PM *Lipschitz Stratifications and Generic Wings*.  
 (231) **Dwi Juniati**, Universitas Negeri Surabaya (UNESA), Indonesia, **David J. A. Trotman\*** and **Guillaume Valette**, University of Provence (979-58-208)
- 3:05PM *Recent results on the Pierce-Birkhoff conjecture*. Preliminary report.  
 (232) **Francois Lucas**, Universite d'Angers, Angers, France, **James J. Madden**, University of Louisiana, Baton Rouge, **Daniel Schaub**, Universite d'Angers, Angers, France, and **Mark Spivakovsky\***, Labo. de Math. E. Picard, Universite Paul Sabatier, Toulouse, France (979-14-228)
- 3:55PM *Additive invariants of real varieties*. Preliminary report.  
 (233) **Clint McCrory\***, University of Georgia, and **Adam Parusinski**, University of Angers (979-14-77)
- 4:25PM *Betti numbers of semialgebraic and sub-Pfaffian sets*.  
 (234) **Andrei Gabrielov**, Purdue University (979-14-92)

**Lesley M. Sibner**  
 Associate Secretary  
 Brooklyn, New York