



***Special Session on Microlocal Analysis and Applications, I***

8:20 AM – 10:50 AM                      Room 237, Orson Spencer Hall

Organizers: **Gunther Uhlmann**, University of Washington  
**Maciej Zworski**, University of California, Berkeley

- 8:20AM *To be announced.*  
 (13) **Richard B. Melrose**, Massachusetts Institute of Technology (946-35-130)
- 9:00AM *Wave Equations with Low Regularity Coefficients.*  
 (14) **Hart F Smith**, University of Washington, Seattle (946-35-82)
- 9:40AM *Sharp Spectral Asymptotics for Operators with Non-Smooth Coefficients.*  
 (15) **Victor Ivrii**, University of Toronto (946-35-32)
- 10:20AM *Existence of resonances for metric perturbation of the Euclidean Laplacian in even dimensional spaces.*  
 (16) Preliminary report.  
**Siu-Hung Tang**, University of California, Berkeley (946-35-107)

***Special Session on Ergodic Theory of Stochastic Processes, I***

8:30 AM – 10:20 AM                      Room 233, Orson Spencer Hall

Organizers: **Stewart N. Ethier**, University of Utah  
**Davar Khoshnevisan**, University of Utah

- 8:30AM *Monotonicity of conditional distributions and growth models on trees.*  
 (17) **Thomas M Liggett**, UCLA (946-60-45)
- 9:00AM *Random Walks on Stochastic Sceneries.* Preliminary report.  
 (18) **David A Levin**, University of Connecticut (946-60-89)
- 9:30AM *Joint Large Deviations for Additive Functionals of Harris Recurrent Markov Chains.* Preliminary report.  
 (19) **Xia Chen**, University of Utah (946-60-85)
- 10:00AM *Random logistic maps.*  
 (20) **Krishna B Athreya**, Iowa State University (946-60-84)

***Special Session on Ergodic and Number Theory, I***

8:30 AM – 10:50 AM                      Room 234, Orson Spencer Hall

Organizers: **Robert Burton**, Oregon State University  
**Thomas Schmidt**, Oregon State University

- 8:30AM *Geodesics on Riemann Surfaces with Ramification Points of Order Greater than 2.* Preliminary report.  
 (21) **Mark Sheingorn**, CUNY - Baruch (946-30-42)
- 9:00AM *Veech groups and polygonal coverings.*  
 (22) **Pascal Hubert**, Institut de Mathématiques de Luminy, and **Thomas A Schmidt\***, Oregon State University (946-30-115)
- 9:30AM *Geodesic flow on nonpositively curved length spaces.* Preliminary report.  
 (23) **Christopher M Judge**, Indiana University (946-37-77)
- 10:00AM *Periodic and singular geodesics on flat surfaces, with applications to billiards.* Preliminary report.  
 (24) **Eugene Gutkin**, University of Southern California (946-37-97)
- 10:30AM *A tessellation associated to a quadratic differential.*  
 (25) Preliminary report.  
**William A Veech**, Rice University (946-37-61)

***Special Session on Arithmetical Algebraic Geometry, I***

9:00 AM – 10:50 AM                      Room 231, Orson Spencer Hall

Organizers: **Minhyong Kim**, University of Arizona  
**Wieslawa Niziol**, University of Utah

- 9:00AM *The Brauer-Manin Obstruction for 0-cycles of degree 1.* Preliminary report.  
 (26) **Victor Scharaschkin**, University of Southern California (946-11-14)
- 9:30AM *A conjecture of Milne and its applications.*  
 (27) Preliminary report.  
**Adrian Vasiu**, University of Utah, Salt Lake City (946-14-43)
- 10:00AM *On the crystalline cohomology of Frobenius-split varieties.*  
 (28) **Kirti Joshi**, University of Arizona (946-14-119)
- 10:30AM *Distribution of almost division points.*  
 (29) **Shou-Wu Zhang**, Columbia University (946-11-62)

***Special Session on Numerical Methods for Partial Differential Equations, I***

9:00 AM – 10:50 AM                      Room 235, Orson Spencer Hall

Organizers: **Benito Chen**, Institute for Scientific Study, University of Wyoming  
**Junping Wang**, Institute for Scientific Study, University of Wyoming

- 9:00AM *Large Finite Volume Element Methods in Porous Media Flow.*  
 (30) **Richard E Ewing\***, ISC, Texas A&M University, **Raytcho Lazarov** and **Yanping Lin**, Texas A&M University (946-35-88)
- 9:30AM *Development of an adaptive mixed finite element simulator for coupled geomechanics and fluid flow problems.*  
 (31) **Hongsen Chen**, University of Wyoming (946-35-113)
- 10:00AM *The Sinc-Galerkin Method for Differential Equations with an Application to Oceanography.*  
 (32) **Kenneth L Bowers\***, Montana State University, **Donald F Winter**, Department of Physics, University of Redlands, and **John Lund**, Montana State University (946-35-94)
- 10:30AM *Numerical Simulation Of Biofilm Growth at the Pore Scale.*  
 (33) **Benito M Chen\*** and **Yaqing Li**, University of Wyoming (946-35-90)

***Invited Address***

11:10 AM – NOON                              Saltair Room, Union Building

- (34) *Continued Fraction Algorithms: Dynamics, Convergence, and Stochastics.* Preliminary report.  
**Robert M. Burton**, Oregon State University (946-11-129)

***Invited Address***

1:30 PM – 2:20 PM                              Saltair Room, Union Building

- (35) *Harmonic Maps to R-Trees.*  
**Richard A Wentworth**, University of California, Irvine (946-58-78)

***Special Session on Complex Variables and Operator Theory, II***

3:00 PM – 6:20 PM                              Room 236, Orson Spencer Hall

Organizers: **Siqi Fu**, University of Wyoming  
**Farhad Jafari**, University of Wyoming

- Peter Polyakov**, University of Wyoming
- 3:00PM *Commutators on harmonic Bergman spaces.*  
(36) **Zhijian Wu**, University of Alabama (946-47-75)
- 3:30PM *A Beurling-Lax-Halmos Theorem for N.P. Kernels.*  
(37) Preliminary report.  
**Tavan T Trent\***, University of Alabama, and **Scott A McCollough**, University of Florida (946-47-66)
- 4:00PM *Regularity of the Szegő projection for non-smooth planar domains.* Preliminary report.  
(38) **Loredana Lanzani\***, University of Arkansas, and **Elias Stein**, Princeton University (946-30-79)
- (39) *Extending holomorphic functions of infinitely many variables.* Preliminary report.  
**Laszlo Lempert**, Purdue University (946-46-127)
- 5:00PM *Hermitian metric with constant holomorphic sectional curvature on a convex domain.* Preliminary report.  
(40) **Wing-Sum Cheung**, University of Hong Kong, and **Bun Wong\***, University of California, Riverside (946-32-99)
- 5:30PM *Some nonlinear representations of the Lorentz group by holomorphic automorphisms of a Lie ball.* Preliminary report.  
(41) **Yaakov Friedman**, Jerusalem College of Technology, and **Bernard Russo\***, University of California, Irvine (946-32-103)
- 6:00PM *A Transformation formula for the Bergman kernel functions.*  
(42) **Siqi Fu**, The University of Wyoming (946-32-59)

### Special Session on Arithmetical Algebraic Geometry, II

3:00 PM – 4:50 PM Room 231, Orson Spencer Hall

Organizers: **Minhyong Kim**, University of Arizona  
**Wieslawa Niziol**, University of Utah

- 3:00PM *Singularities of the height strata in the moduli of K3 surfaces.* Preliminary report.  
(43) **Arthur E Ogus**, University of California, Berkeley (946-14-109)
- 3:30PM *The Hodge-Arakelov Theory of Elliptic Curves.*  
(44) **Shinichi Mochizuki**, Research Institute for Mathematical Sciences, Kyoto University (946-11-37)
- 4:00PM *Differential modular forms.* Preliminary report.  
(45) **Alexandru Buium**, University of New Mexico (946-11-10)
- 4:30PM *Mixed Tate motives and a conjecture of Hain.* Preliminary report.  
(46) **Norman P Levin**, University of Minnesota (946-14-76)

### Special Session on Commutative Algebra, II

3:00 PM – 5:20 PM Room 232, Orson Spencer Hall

Organizers: **Paul Roberts**, University of Utah  
**Roger Wiegand**, University of Nebraska

- 3:00PM *An Alternative Definition of Serre's Intersection Multiplicity.*  
(47) **C-Y. Jean Chan**, University of Utah (946-13-68)
- 3:30PM *Vanishing of (co)homology over local rings.*  
(48) **David A Jorgensen**, University of Texas at Arlington (946-13-41)
- 4:00PM *Boundedness of local cohomology for graded affine algebras.*  
(49) **Adela N Vraciu**, University of Michigan (946-13-36)
- 4:30PM *Multiplicities and Localization (preliminary report).*  
(50) Preliminary report.  
**Sean M Sather-Wagstaff**, University of Utah (946-13-30)

- 5:00PM *Absolute, relative, and stable cohomology of modules of finite G-dimension.* Preliminary report.  
(51) **Luchezar L Avramov\***, Purdue University, and **Alex Martsinkovsky**, Northeastern University (946-16-102)

### Special Session on Ergodic Theory of Stochastic Processes, II

3:00 PM – 5:20 PM Room 233, Orson Spencer Hall

Organizers: **Stewart N. Ethier**, University of Utah  
**Davar Khoshnevisan**, University of Utah

- 3:00PM *Langevin diffusions and their applications in MCMC.*  
(52) **Richard L Tweedie**, University of Minnesota (946-60-56)
- 3:30PM *Analysis of Fluid Models for Processor Sharing Queues.*  
(53) **Amber L Puha\***, California State University San Marcos, and **Ruth J Williams**, University of California San Diego (946-60-24)
- 4:00PM *Brownian Bubbles and Local Time of the Brownian Sheet.* Preliminary report.  
(54) **Thomas S Mountford**, UCLA (946-60-86)
- 4:30PM *Discrete spectrum of nonstationary stochastic processes on groups.*  
(55) **Leonid G. Hanin\***, Idaho State University, and **Bertram M. Schreiber**, Wayne State University (946-60-40)
- 5:00PM *Representations and limits for functionals of stochastic processes.*  
(56) **S. Borovkova**, **Robert M Burton\***, Oregon State University, and **H. Dehling** (946-60-121)

### Special Session on Microlocal Analysis and Applications, II

3:00 PM – 6:10 PM Room 237, Orson Spencer Hall

Organizers: **Gunther Uhlmann**, University of Washington  
**Maciej Zworski**, University of California, Berkeley

- 3:00PM *Semi-classical resolvent estimates for trapping perturbations.*  
(57) **Vesselin Petkov**, Universite de Bordeaux I (946-81-49)
- 3:40PM *Recovering asymptotics of some perturbations from fixed energy scattering data.* Preliminary report.  
(58) **Tanya J Christiansen\***, University of Missouri, and **Mark S Joshi**, NatWest, London, England (946-35-87)
- 4:20PM *Characteristic Strichartz Estimates.*  
(59) **Allan Greenleaf\***, University of Rochester, and **Gunther Uhlmann**, University of Washington (946-35-83)
- 5:00PM *Lower bound of the number of Rayleigh resonances.*  
(60) **Plamen Stefanov**, East Carolina University (946-35-46)
- 5:40PM *Inverse Scattering on Asymptotically Hyperbolic Spaces.*  
(61) **Antônio C Sá Barreto\***, Purdue University, and **Mark S Joshi**, University of Cambridge (946-35-44)

### Special Session on Numerical Methods for Partial Differential Equations, II

3:00 PM – 5:50 PM Room 235, Orson Spencer Hall

Organizers: **Benito Chen**, Institute for Scientific Study, University of Wyoming

- Junping Wang**, Institute for Scientific Study, University of Wyoming
- 3:00PM (62) *A Numerical Study of Fluid Mixing in Multiphase Flows in Heterogeneous Porous Media.*  
**Frederico Furtado**, University of Wyoming (946-35-112)
- 3:30PM (63) *A Family of Numerical Methods for Stiffly Forced Conservation Laws.*  
**C Hillyard**, University of Arizona, and **J Koebbe\***, Utah State University (946-35-105)
- 4:00PM (64) *Models of low-speed flow for near-critical fluids.*  
**Diane L Denny**, University of Wyoming (946-35-106)
- 4:30PM (65) *Multigrid Method and High Order Compact Scheme for Solving Boundary Layer Problems on Nonuniform Grids.*  
**Ge Lixin** and **Jun Zhang\***, University of Kentucky (946-65-111)
- 5:00PM (66) *Mixed finite element methods for variational inequalities.*  
**Hong Huang**, Texas A&M, **Junping Wang\*** and **Yongjun Yang**, University of Wyoming (946-35-122)
- 5:30PM (67) *Mass conservation and long time error control.* Preliminary report.  
**Tong Sun**, Texas A&M University (946-35-126)

- 3:45PM (76) *New ternary quasi cyclic codes and improvements on minimum distances.*  
**Irfan Siap**, **Nuh Aydin\***, The Ohio State University, and **Dijen K. Ray-Chaudhuri**, The Ohio State University (946-05-12)
- 4:00PM (77) *A Theory of Resultant of Diophantine Equations.*  
**Kau U Lu**, California State University, Long Beach (946-11-28)
- 4:15PM (78) *Random Sperner Systems.* Preliminary report.  
**Michelle K Bylund\***, Brigham Young University, **Jayadev S Athreya**, Iowa State University, **Anant P Godbole**, Michigan Technological University, and **Jessica Maia**, Washington University (946-60-116)
- 4:30PM (79) *Dominance of geometry over algebraic elegance.* Preliminary report.  
**Gunwon Lee**, Seoul National University (946-00-25)
- 4:45PM (80) *A Brief History and Discussion on the Calculus.*  
**L. F. M. York**, CFCTE, Inc. (946-03-06)

## Sunday, September 26

### Meeting Registration

8:00 AM – NOON outside Saltair and Collegiate Rooms, Union Building

### Special Session on Ergodic and Number Theory, II

3:00 PM – 5:20 PM Room 234, Orson Spencer Hall

Organizers: **Robert Burton**, Oregon State University  
**Thomas Schmidt**, Oregon State University

- 3:00PM (68) *The mother of all continued fractions.*  
**Karma Dajani\***, Universiteit Utrecht, and **Cor Kraaikamp**, TUDelft (946-28-120)
- 3:30PM (69) *Mixing Measures Achieve Nearly Maximal Entropy in  $\mathbb{Z}^d$  Shifts of Finite Type with Uniform Filling.* Preliminary report.  
**E. Arthur Robinson, Jr.**, George Washington University, and **Ayse A Sahin\***, North Dakota State University (946-37-91)
- 4:00PM (70) *Subshifts of a higher-dimensional shift of finite type.*  
**Anthony N Quas\*** and **Paul B Trow**, University of Memphis (946-58-98)
- 4:30PM (71)  *$L^q$  densities and  $q$ -dimensions.* Preliminary report.  
**Mariusz Urbanski**, University of North Texas (946-37-48)
- 5:00PM (72) *On the convergence of series of translates of measurable functions.*  
**Zoltan Buczolich**, Eotvos Lorand University, **Jean-Pierre Kahane**, Université de Paris-Sud, and **R. Daniel Mauldin\***, University of North Texas (946-28-128)

### General Session

3:00 PM – 4:55 PM Room 209, Orson Spencer Hall

- 3:00PM (73) *Sphere of Influence Graphs and the  $L_\infty$ -Metric.*  
**Thomas Quint\***, University of Nevada at Reno, and **T S Michael**, United States Naval Academy (946-05-13)
- 3:15PM (74) *Notions of stability for one dimensional dynamical systems.*  
**T H Steele**, Weber State University (946-26-26)
- 3:30PM (75) *New quasi cyclic linear codes over  $\mathbb{F}_5$  and improvements on bounds.*  
**Irfan Siap\*** and **Dijen K. Ray-Chaudhuri**, The Ohio State University (946-05-05)

### Special Session on Complex Variables and Operator Theory, III

8:00 AM – 10:50 AM Room 236, Orson Spencer Hall

Organizers: **Siqi Fu**, University of Wyoming  
**Farhad Jafari**, University of Wyoming  
**Peter Polyakov**, University of Wyoming

- 8:00AM (81) *Sharp Lipschitz estimates for operator  $\bar{\partial}_b$ .*  
**Peter L Polyakov**, University of Wyoming (946-32-58)
- 8:30AM (82) *Compactness in the  $\bar{\partial}$ -Neumann problem.* Preliminary report.  
**Siqi Fu**, University of Wyoming, and **Emil J Straube\***, Texas A&M University (946-32-74)
- 9:00AM (83) *The heat kernel for  $\bar{\partial}_b^* \bar{\partial}_b$  on domains of finite type in  $\mathbb{C}^2$ .* Preliminary report.  
**Alexander J Nagel**, University of Wisconsin-Madison (946-32-53)
- 9:30AM (84) *Mappings between balls.* Preliminary report.  
**Xiaojun Huang**, Rutgers University (946-32-73)
- 10:00AM (85) *Bohr's power series theorem in the unit ball of  $\ell_p(\mathbb{C}^n)$ .* Preliminary report.  
**Harold P Boas**, Texas A&M University (946-32-27)
- 10:30AM (86) *Conformal maps and non-reversibility of elliptic area-preserving maps.*  
**Xianghong Gong**, Oklahoma State University (946-58-31)

### Special Session on Commutative Algebra, III

8:00 AM – 10:50 AM Room 232, Orson Spencer Hall

Organizers: **Paul Roberts**, University of Utah  
**Roger Wiegand**, University of Nebraska

- 8:00AM (87) *Free extensions of prime power order.*  
**Daniel Katz**, University of Kansas (946-13-92)
- 8:30AM (88) *Prime ideals in two-dimensional domains.*  
**Serpil Saydam**, Northeast Louisiana State University, and **Sylvia M Wiegand\***, University of Nebraska (946-13-60)

- 9:00AM *Behavior of tight closure under flat maps with Gorenstein fibers.* Preliminary report.  
(89) **Ian M Aberbach**, University of Missouri (946-13-35)
- 9:30AM *Gorenstein Modules.* Preliminary report.  
(90) **Graham J Leuschke**, University of Nebraska-Lincoln (946-13-52)
- 10:00AM *F-Rational Rings and Flat Base Change.* Preliminary report.  
(91) **Florian Enescu**, University of Mathematics (946-13-23)
- 10:30AM *Local-Global duality for finitely generated modules over Artin rings.* Preliminary report.  
(92) **Ruth I Michler**, University of North Texas (946-13-15)

### AMS Exhibit and Book Sale

8:00 AM – NOON Collegiate Room, Union Building

### Special Session on Microlocal Analysis and Applications, III

8:20 AM – 10:50 AM Room 237, Orson Spencer Hall

- Organizers: **Gunther Uhlmann**, University of Washington  
**Maciej Zworski**, University of California, Berkeley
- 8:20AM *Hearing the shape of an analytic drum with the symmetries of an ellipse.* Preliminary report.  
(93) **Steve Zelditch**, Johns Hopkins University (946-35-95)
- 9:00AM *Generalized geodesic flow and inverse scattering by obstacles.*  
▶ (94) **Luchezar N Stoyanov**, University of Western Australia (946-35-81)
- 9:40AM *Microlocal analysis in the service of harmonic analysis, and vice-versa.*  
(95) **Michael E Taylor**, University of North Carolina (946-35-69)
- 10:20AM *Propagation of singularities and structure of the scattering matrices in many-body scattering in the presence of bound states.* Preliminary report.  
(96) **Andras Vasy**, UC Berkeley (946-35-51)

### Special Session on Arithmetical Algebraic Geometry, III

9:00 AM – 10:50 AM Room 231, Orson Spencer Hall

- Organizers: **Minhyong Kim**, University of Arizona  
**Wieslawa Niziol**, University of Utah
- 9:00AM *Frobenius and monodromy operators on de Rham cohomology of crystals on semistable curves via degeneration.* Preliminary report.  
(97) **Adrian Iovita**, University of Washington (946-11-38)
- 9:30AM *On the supersingular locus of Hilbert-Blumenthal modular varieties.*  
(98) **Chia-Fu Yu**, Columbia University (946-11-72)
- 10:00AM *Tate-Linear Subvarieties and Density of Hecke Orbits.* Preliminary report.  
(99) **Ching-Li Chai**, University of Pennsylvania (946-14-63)
- 10:30AM *Monodromy in families of abelian varieties.* Preliminary report.  
(100) **Jeffrey D Achter**, University of Massachusetts, Amherst (946-14-57)

### Invited Address

11:10 AM – NOON Saltair Room, Union Building

- (101) *Resonances in chaotic scattering.*  
**Maciej Zworski**, University of California, Berkeley (946-35-17)

### Invited Address

1:30 PM – 2:20 PM Saltair Room, Union Building

- (102) *Monodromy of Schwarzian equations on Riemann surfaces, holomorphic bundles and dynamics of the mapping class group on character varieties.* Preliminary report.  
**Michael Kapovich**, University of Utah (946-30-104)

### Special Session on Complex Variables and Operator Theory, IV

3:00 PM – 4:50 PM Room 236, Orson Spencer Hall

Organizers: **Siqi Fu**, University of Wyoming  
**Farhad Jafari**, University of Wyoming  
**Peter Polyakov**, University of Wyoming

- 3:00PM *New results for The Logvinenko-Sereda Theorem.* Preliminary report.  
(103) **Oleg Kovrijkine**, California Institute of Technology (946-42-80)
- 3:30PM *Composition operators on analytic Lipschitz spaces of the unit ball.* Preliminary report.  
(104) **Dana D. Clahane**, University of California, Irvine (946-47-125)
- 4:00PM *Rational approximation of analytic functions of a finite generalized order.*  
(105) **Vasiliy Prokhorov**, University of South Alabama (946-30-117)
- 4:30PM *Computation and Application of Operator Cosine.* Preliminary report.  
(106) **Morteza Seddighin**, Texas A&M University-Texarkana (946-15-07)

### Special Session on Arithmetical Algebraic Geometry, IV

3:00 PM – 4:20 PM Room 231, Orson Spencer Hall

Organizers: **Minhyong Kim**, University of Arizona  
**Wieslawa Niziol**, University of Utah

- 3:00PM *Moduli Spaces of Curves with Marked Points which are of General Type.*  
(107) **Adam M Logan**, MSRI (946-14-101)
- 3:30PM *Fundamental Groups of Curves.* Preliminary report.  
(108) **Katherine F Stevenson**, Caltech (946-14-114)
- 4:00PM *L-functions of p-adic lisse sheaves.*  
(109) **Mathew Emerton**, University of Michigan (946-14-131)

### Special Session on Commutative Algebra, IV

3:00 PM – 5:50 PM Room 232, Orson Spencer Hall

Organizers: **Paul Roberts**, University of Utah  
**Roger Wiegand**, University of Nebraska

- 3:00PM *Some Aspects of the Mononical Conjecture.*  
(110) **Sankar P. Dutta**, University of Illinois at Urbana-Champaign (946-13-29)
- 3:30PM *Associated graded rings of numerical semigroup rings.* Preliminary report.  
(111) **Victoria A Sapko**, University of Nebraska-Lincoln (946-13-16)

- 4:00PM *Ext and Hilbert polynomials.*  
(112) **Emanoil Theodorescu**, University of Kansas  
(946-13-93)
- 4:30PM *Separable integral extensions.*  
(113) **Anurag K Singh**, University of Utah (946-13-39)
- 5:00PM *Direct-Sum Cancellation of Modules over Quadratic Orders.*  
(114) **Ryan D Karr**, University of Nebraska-Lincoln  
(946-13-50)
- 5:30PM *Taylor tower for rational algebraic K-theory and Hochschild homology.*  
(115) **Miriam Ruth Kantorovitz\***, University Of Illinois, UC, and **Randy McCarthy**, University of Illinois  
(946-18-54)

***Special Session on Microlocal Analysis and Applications, IV***

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3:00 PM – 4:10 PM                      **Room 237, Orson Spencer Hall**

Organizers: **Gunther Uhlmann**, University of Washington  
**Maciej Zworski**, University of California, Berkeley

- 3:00PM *Nonlinear scattering on hyperbolic manifolds.*  
(116) Preliminary report.  
**Rafe Mazzeo**, Stanford University (946-58-70)
- 3:40PM *On the generalized eigenfunctions of one-dimensional Schrödinger operators.* Preliminary report.  
(117) **Michael Christ\***, University of California, Berkeley, and **Alexander Kiselev**, University of Chicago  
(946-35-108)

**Bernard Russo**  
Associate Secretary  
Irvine, California