
Conferences

Joint Summer Research Conferences in the Mathematical Sciences

**Snowbird Resort
Snowbird, Utah
June 8–July 24, 2003**

The 2003 Joint Summer Research Conferences will be held at the Snowbird Resort (<http://summer.snowbird.com/pages/home/default.php>) from June 8 to July 24, 2003. The topics and organizers for the conferences were selected by a committee representing the AMS, the Institute of Mathematical Sciences (IMS), and the Society for Industrial and Applied Mathematics (SIAM). Committee members at the time were Paul Baum, David Brydges, Tom Diccio, Charles Doering, Ron Donagi, James A. Fill, William Mark Goldman, Barbara Keyfitz, Mark Gordon Low, Hema Srinivasan, Kenneth Stephenson, and Olof B. Widlund.

It is anticipated that the conferences will be partially funded by a grant from the National Science Foundation and perhaps others. Special encouragement is extended to junior scientists to apply. A special pool of funds expected from grant agencies has been earmarked for this group. Other participants who wish to apply for support funds should so indicate; however, available funds are limited, and individuals who can obtain support from other sources are encouraged to do so.

All persons who are interested in participating in one of the conferences should request an invitation by sending the following information to Summer Research Conferences Coordinator, AMS, P. O. Box 6887, Providence, RI 02940; or by email to wsd@ams.org no later than **March 3, 2003**.

Please type or print the following:

1. Title and dates of conference.
2. Full name.
3. Mailing address.
4. Phone numbers (including area code) for office, home, and fax.
5. Email address.
6. Your anticipated arrival/departure dates.
7. Scientific background relevant to the institute topics; please indicate if you are a student or if you received your Ph.D. on or after 7/1/95.
8. The amount of financial assistance requested (or indicate if no support is required).

All requests will be forwarded to the appropriate organizing committee for consideration. In late April all applicants will receive formal invitations (including specific offers of support if applicable), a brochure of

conference information, program information known to date, along with information on travel and local housing. All participants will be required to pay a nominal registration fee.

Questions concerning the scientific program should be addressed to the organizers. Questions of a nonscientific nature should be directed to the Summer Research Conferences coordinator at the address provided above. Please watch <http://www.ams.org/meetings/> for future developments about these conferences.

Lectures begin on Sunday morning and run through Thursday. Check-in for housing begins on Saturday. No lectures are held on Saturday.

Spectral Theory and Inverse Spectral Theory for Jacobi Operators

Sunday, June 8–Thursday, June 10

Svetlana Jitomirskaya, University of California, Irvine
Kenneth T.-R. McLaughlin, University of
North Carolina, Chapel Hill
Xin Zhou, Duke University

Goal of the conference: to bring together researchers from two areas: the spectral theory of Jacobi operators and the inverse spectral theory of Jacobi operators. The hope is to provide opportunities for cross-fertilization of ideas between these two areas.

Confirmed participants include: Paul Nevai (Ohio State University), Mourad Ismail (University of Southern Florida), Percy Deift (Courant Institute), Abel Klein (University of California, Irvine), Jinho Baik (Princeton University), Walter Van Assche (Catholic University of Leuven, Belgium), Arno Kuijlaars (Catholic University of Leuven, Belgium), Doron Lubinsky (Georgia Tech), Thomas Kriecherbauer (University of Bochum, Germany), Alexander Kiselev (University of Chicago), Nicholas Ercolani (University of Arizona), Ed Saff (Vanderbilt University), Rowan Killip (University of Pennsylvania), Svetlana Jitomirskaya (University of California, Irvine), Kenneth McLaughlin (University of North Carolina, Chapel Hill, and University of Arizona), Xin Zhou (Duke University).

For further information, please visit the conference website, <http://www.amath.unc.edu/SRC602.html>, maintained by the organizers.

Machine Learning, Statistics, and Discoveries

Sunday, June 22–Thursday, June 26

Xiaotong Shen, Ohio State University
Joseph S. Verducci, Ohio State University

Machine learning is an active and rapidly growing area of research that offers systematic and machine-implementable

approaches to extracting information from vast and complex data sources. The goal of this conference is to assemble researchers from the disciplines of computer science and statistics around the topical themes of support vector machines and other large margin classifiers, boosting and ensemble methods, new extensions of classification and regression, methods for approximate inference, and application areas. We anticipate a lively exchange between the two communities, which we hope will lead to cross-fertilization and new collaborations across traditional academic disciplines. Young researchers, graduate students, and underrepresented groups are encouraged to attend, as they may be the most capable of forming lasting “bridges” across the two cultures in the future.

Mathematics of Finance

Sunday, June 22–Thursday, June 26

Wendell H. Fleming, Brown University
 Jean-Pierre Fouque, North Carolina State University
 George Papanicolaou, Stanford University
 Bozenna Pasik-Duncan, University of Kansas
 Stan R. Pliska, University of Illinois at Chicago
 K. Ronnie Sircar, Princeton University
 George Yin, Wayne State University (Chair)
 Qing Zhang, University of Georgia (Cochair)

Research in mathematics of finance has witnessed tremendous progress in recent years. The Black-Scholes model and its various extensions for pricing of options have had an influential impact on financial practice and have led to a revolution in the financial industry. The introduction of stochastic analysis and stochastic control techniques has resulted in a number of important advances. To name just a few, these include the study of valuation of contingent claims in complete and incomplete markets, consumption-investment models with or without constraints, portfolio management for institutional investors such as pension funds and banks, and risk assessment and management using financial derivatives. On the other hand, the applications require and stimulate many new and exciting theoretical discoveries.

As a rapidly expanding and growing discipline, mathematics of finance involves a wide spectrum of techniques that go far beyond the traditional applied mathematics. Stochastic calculus, dynamic programming, and partial differential equations have become indispensable tools to finance, a discipline that previously relied on “a collection of anecdotes, rules of thumb, and shuffling of accounting data.” As a major impetus to the development of financial management and economics, the research in mathematics of finance has had a major impact on the global economy. For instance, using stochastic calculus in the pricing of options has become a standard practice nowadays. It can be anticipated that it will continue to stimulate progress in other areas of mathematics in the years to come.

The rapid progress in mathematics of finance has necessitated communication and networking among researchers in different disciplines. To inherit the past and to usher in the future, a Joint Summer Research Conference

in mathematics of finance will be sponsored jointly by the AMS, IMS, and SIAM, to be held in June 2003. The main purpose of the proposed conference is to bring together researchers from mathematical sciences, finance, economics, and engineering; to review and update recent advances; and to identify future directions of mathematics of finance. This conference will focus on scientific topics that include but are not limited to valuation of contingent claims and dynamic hedging, consumption-investment models and portfolio management, and risk assessment and management using financial derivatives.

Confirmed invited speakers include: M. Avellaneda, T. Bielecki, R. Carmona, P. Carr, M. Davis, T. Duncan, N. El Karoui, R. Elliott, W. H. Fleming, J.-P. Fouque, X. Guo, F. Hanson, U. G. Haussmann, K. Helmes, D. Hernández-Hernández, Y. Hu, Y. Kabanov, I. Karatzas, J. Ma, W. M. McEneaney, T. Pang, G. Papanicolaou, B. Pasik-Duncan, E. Platen, S. R. Pliska, L. C. G. Rogers, W. Runggaldier, M. Rutkowski, S.-J. Sheu, K. R. Sircar, S. E. Shreve, H. M. Soner, J. L. Stein, L. Stettner, R. Stockbridge, S. Stojanovic, M. Taksar, H. Wang, J. W. Wang, J. Westman, D. D. Yao, G. Yin, J. Yong, Th. Zariphopoloulou, Y. Zeng, Q. Zhang, and X. Y. Zhou.

Hydrodynamic Stability and Flow Control

Sunday, July 6–Thursday, July 10

Peter J. Schmid, University of Washington (Cochair)
 James J. Riley, University of Washington (Cochair)

Hydrodynamic stability theory has matured greatly over the last decade and has seen a marked expansion of available tools to tackle complex fluid systems that a few years ago seemed untractable. Similarly, classical control theory has greatly expanded its scope and has provided a range of techniques that hold great promise for many applications in fluid dynamics. The interface of these two fields is expected to spawn new and exciting research directions that will advance our understanding and mastery of complex fluid systems. It is the purpose of this conference to bring together experts in the fields of stability theory and flow control, to foster dialogue, and to illustrate—the utility of an interdisciplinary perspective.

The following broad themes will be covered at this meeting:

1. stability theory of complex flows
2. global and absolute stability theory
3. adjoint techniques in stability, receptivity and flow control
4. optimal and robust control of fluid flow (adjoint and Riccati approach)

The conference will provide a forum for researchers to report recent findings, identify new research directions, and initiate future collaborations. We envision a conference format that encourages discussion and inspires a lively exchange of ideas. Invited speakers with extensive experience will start each day with a review/tutorial lecture that will introduce participants to the field, outline the current state-of-the-art, and touch upon open and

challenging problems. These lectures will be followed by presentations of recent results and novel approaches in the described areas.

Participation of recent Ph.D.'s as well as advanced graduate students is particularly encouraged, as is the participation of minorities and women.

Researchers interested in participation can obtain additional information from the conference website, <http://www.amath.washington.edu/~pjs/SRC.html>, maintained by the organizers.

Integer Points in Polyhedra, Geometry, Number Theory, Algebra, Optimization

Sunday, July 13–Thursday, July 17

Alexander Barvinok, University of Michigan
 Matthias Beck, SUNY Binghamton (Cochair)
 Christian Haase, Duke University (Cochair)
 Bruce Reznick, University of Illinois,
 Urbana-Champaign
 Michèle Vergne, École Polytechnique Paris
 Volkmar Welker, Philipps-Universität Marburg

How many nonnegative integral solutions does a system of linear equations with integer coefficients have?

Questions like the above have applications in a wealth of areas outside mathematics. At the same time, they appear in different disguises in various mathematical fields. For example, the original question has a number theoretical flavor. But in the view of a discrete geometer it “actually” asks for the number of lattice points in a polyhedron. In commutative algebra one would ask for the Hilbert series of a graded ring and in algebraic geometry for the Todd class of a toric variety. The (apparently simpler) question whether there is a solution at all is an integer linear optimization problem.

The proposed conference focuses on these inner mathematical aspects of lattice points. The main motivation is to provide an opportunity to nurture and further develop the interaction between the disciplines.

Our preliminary list of hour speakers includes Sylvain Cappell, Jeff Lagarias, Richard Stanley, Bernd Sturmfels, and Rekha Thomas.

For further information please visit the conference website, <http://www.math.binghamton.edu/matthias/scr.html>.

Commutative Algebra: Presentations by Young Researchers

Sunday, July 20–Thursday, July 24

Jürgen Herzog, Universität Essen
 Craig Huneke, University of Kansas
 Roger L. Wiegand, University of Nebraska

The goal of the conference is to bring together young researchers in several areas of commutative algebra in order to provide a showcase for important new ideas and to encourage collaboration among participants. All research talks will be given by mathematically young

researchers, primarily those no more than two or three years beyond the Ph.D., and graduate students in their final year of study. The conference will focus on the following topics: (1) homological methods in commutative algebra, (2) characteristic p methods and tight closure, (3) combinatorics and commutative algebra, and (4) representation theory of local rings. Each topic will be introduced by an expository talk, and informal discussions will follow the research talks.

The following individuals have at least tentatively accepted invitations to give research talks: Holger Brenner, Ruhr-Universität Bochum; C-Y. Jean Chan, Purdue University; Catalin Ciuperca, University of California, Riverside; Sara Faridi, Université du Québec à Montréal; Laura Ghezzi, University of Missouri; Russell Goward, Xavier University of Louisiana; Tai Ha, University of Missouri; Wolfgang Hasler, Karl-Franzens Universität Graz/University of Nebraska; Michael Hellus, Universität Leipzig; Abdul Jarrar, New Mexico State University; Graham Leuschke, University of Kansas; Diane Maclagan, Stanford University; Laura Matusevitch, University of California, Berkeley; Uwe Nagel, Universität Paderborn/University of Kentucky; Hidefumi Ohsugi, Rikkyo University; Tim Roemer, Universität Essen; Sindi Sabourin, University of Notre Dame; Sean Sather-Wagstaff, University of Illinois; Hans Schoutens, Ohio State University; Amelia Taylor, Rutgers University; Emanoil Theodorescu, University of Kansas; Adela Vraciu, University of Kansas; Carolyn Yackel, Mercer University.

The following have tentatively agreed to give expository talks and/or lead discussion sessions: Luchezar Avramov, University of Nebraska; Juergen Herzog, Universität Essen; Craig Huneke, University of Kansas; Irena Peeva, Purdue University; Karen Smith, University of Michigan; Roger L. Wiegand, University of Nebraska.

In order to ensure ample time for informal discussions and mathematical interaction, there will be no contributed talks. The total number of research talks will be 30–35. It is expected that some support will be available for those wishing to attend talks and participate in the informal discussions. For further information about the scientific program, contact Roger Wiegand (rwi egand@math.unl.edu).