



# Banff International Research Station for Mathematical Innovation and Discovery



## 2016 Calendars

### JANUARY

- **1/10 - 1/15 Early Career Investigators Meeting on Quantitative Problems in Human Genetics and Health:** Julien Ayroles (Princeton), Michael Hoffman (U. Toronto), Tuuli Lappalainen (New York Genome Center), Jennifer Listgarten (Microsoft Research), Noah Zaitlen (UC, San Francisco)
- **1/10 - 1/15 Creative Writing in Mathematics and Mathematical Sciences:** Florin Diacu (U. Victoria), Marjorie Senechal (Smith College)
- **1/17 - 1/22 Computational and Numerical Analysis of Transient Problems in Acoustics, Elasticity, and Electromagnetism:** Christian Lubich (U. Tuebingen), Peter Monk (U. Delaware)
- **1/24 - 1/29 Exploiting New Advances in Mathematics to Improve Calculations in Quantum Molecular Dynamics:** Tucker Carrington (Queen's), George Hagedorn (Virginia Tech)
- **1/31 - 2/5 Mathematical and Statistical Challenges in Neuroimaging Data Analysis:** Brian Caffo (Johns Hopkins), Linglong Kong (U. Alberta), Farouk Nathoo (U. Victoria), Todd Ogden (Columbia), Hongtu Zhu (UNC, Chapel Hill)

### FEBRUARY

- **2/7 - 2/12 Vertex Algebras and Quantum Groups:** Yuly Billig (Carleton), Michael Lau (U. Laval), Antun Milas (U. Albany - SUNY), Kailash Misra (North Carolina State U.)
- **2/14 - 2/19 Equivariant Derived Algebraic Geometry:** Andrew Blumberg (U. Texas), Teena Gerhardt (Michigan State U.), Michael Hill (U. Virginia), Tyler Lawson (U. Minnesota)
- **2/21 - 2/26 Synchronizing Smooth and Topological 4-Manifolds:** Matthew Hedden (Michigan State U.), Jen Hom (Columbia), Kent Orr (Indiana U.), Mark Powell (UQAM)
- **2/28 - 3/4 Gauge/Gravity Duality and Condensed Matter Physics:** Johanna Erdmenger (Max Planck, Munich), Rozali Moshe (U. British Columbia)

### MARCH

- **3/6 - 3/11 Homological Mirror Geometry:** Matthew Ballard (U. South Carolina), Colin Diemer (U. Miami), David Favero (U. Alberta)
- **3/13 - 3/18 Lefschetz Properties and Artinian Algebras:** Sara Faridi (Dalhousie), Anthony Iarrobino (Northeastern U.), Rosa M. Miró-Roig (U. Barcelona), Larry Smith (U. Göttingen), Junzo Watanabe (Tokai U.)
- **3/13 - 3/18 Improving the Quantitative Interpretation of Simulation Models:** Bob Rosner (U. Chicago), Leonard Smith (London School of Economics)
- **3/20 - 3/25 Interactions of Gauge Theory with Contact and Symplectic Topology in Dimensions 3 and 4:** Hans Boden (McMaster), Olivier Collin (UQAM), Denis Auroux (Berkeley), John Etnyre (Georgia Tech)
- **3/27 - 4/1 Women in Noncommutative Algebra and Representation Theory:** Georgia Benkart (U. Wisconsin-Madison), Ellen Kirkman (Wake Forest U.), Susan Montgomery (USC), Chelsea Walton (MIT)

### APRIL

- **4/3 - 4/8 Free Resolutions, Representations, and Asymptotic Algebra:** Daniel Erman (U. Wisconsin-Madison), Gregory G. Smith (Queen's)
- **4/10 - 4/15 Beta Ensembles: Universality, Integrability, and Asymptotics:** Peter Forrester (U. Melbourne), Alice Guionnet (MIT), Brian Rider (Temple U.), Benedek Valko (U. Wisconsin-Madison)
- **4/17 - 4/22 Quantum Computer Science:** Michele Mosca (U. Waterloo), Martin Roetteler (Microsoft Research), Peter Selinger (Dalhousie)
- **4/24 - 4/29 Women in Topology II:** Maria Basterra (U. New Hampshire), Kristine Bauer (U. Calgary), Kathryn Hess (EPFL), Brenda Johnson (Union College)

### MAY

- **5/1 - 5/6 Complex Analysis and Complex Geometry:** Finnur Larusson (U. Adelaide), Norman Levenberg (Indiana U.), Rasul Shafikov (U. Western Ontario), Alexandre Sukhov (U. Lille)
- **5/8 - 5/13 Variational Models of Fracture:** Blaise Bourdin (Louisiana State U.), Maurini Corrado (U. Pierre et Maris Curie), Gilles Francfort (Paris-Nord), Christopher Larsen (Worcester Polytechnic)
- **5/15 - 5/20 Computational Modeling in Games:** Michael Mateas (UC, Santa Cruz), Andrew Nealen (NYU)
- **5/22 - 5/27 Operations in Highly Structured Homology Theories:** Andrew Baker (U. Glasgow), Charles Rezk (U. Illinois, U-C)
- **5/29 - 6/3 Ion Transport: Electrodiffusion, Electrohydrodynamics and Homogenization:** Timothy David (U. Canterbury), Huaxiong Huang (York), Chun Liu (Penn State)

### JUNE

- **6/5 - 6/10 Recent Advances in Hydrodynamics:** John Bowman (U. Alberta), Magdalena Czubak (U. Binghamton - SUNY), Slim Ibrahim (U. Victoria), James Kelliher (UC, Riverside), Anna Mazzucato (Penn State)
- **6/12 - 6/17 Uncertainty Modeling in the Analysis of Weather, Climate and Hydrological Extremes:** Peter Guttorp (U. Washington), Phillippe Naveau (CNRS), Francis Zwiers (U. Victoria)
- **6/19 - 6/24 Triangulated Categories and Applications:** Paul Balmer (UCLA), J. Daniel Christensen (U. Western Ontario), Ivo Dell'Ambrogio (U. Lille), Amnon Neeman (ANU)
- **6/26 - 7/1 New Directions in Iwasawa Theory:** Frauke Bleher (U. Iowa), Ted Chinburg (U. Pennsylvania), Ralph Greenberg (U. Washington), Georgios Pappas (Michigan State U.), Romyar Sharifi (U. Arizona)

### JULY

- **7/3 - 7/8 Developing a Comprehensive, Integrated Framework for Advanced Statistical Analyses of Observational Studies:** Michal Abrahamowicz (Royal Victoria Hospital), James Carpenter (London School of Hygiene & Tropical Medicine), Saskia le Cessie (Leiden U. Medical Center), Erica Moodie (McGill), Willi Sauerbrei (U. Freiburg ), Stephen Walter (McMaster)
- **7/10 - 7/15 Geometric and Analytic Inequalities:** Pengfei Guan (McGill), Carlo Nitsch (U. Köln), Paolo Salani (U. Firenze), Cristina Trombetti (U. Napoli Federico II)
- **7/17 - 7/22 Geometric Analysis and General Relativity:** Greg Galloway (U. Miami), David Maxwell (U. Alaska, Fairbanks), Daniel Pollack (U. Washington), Richard Schoen (UC, Irvine)
- **7/24 - 7/29 Whittaker Functions: Number Theory, Geometry and Physics:** Benjamin Brubaker (U. Minnesota), Daniel Bump (Stanford), Gautam Chinta (City U. New York), Solomon Friedberg (Boston College), Paul Gunnells (U. Massachusetts)
- **7/31 - 8/5 Algebraic and Spectral Graph Theory:** Joseph Cheriyan (U. Waterloo), Nicholas Harvey (U. British Columbia), James Lee (U. Washington), Nikhill Srivastava (Berkeley)

### AUGUST

- **8/7 - 8/12 Enabling Process Innovation through Computation:** François Bertrand (École Polytechnique, Montréal), Jos Derksen (Technical U. Delft), Omar Matar (Imperial College), Krishnaswamy Nandakumar (Louisiana State U.), Sankaran Sundaresan (Princeton)
- **8/14 - 8/19 Newest Developments and Urgent Issues in Measurement Error and Latent Variable Problems:** Paul Gustafson (U. British Columbia), Yanyuan Ma (Texas A&M), Liqun Wang (U. Manitoba), Grace Yi (U. Waterloo)
- **8/21 - 8/26 Geometrical Degrees of Freedom in Topological Phases:** Eduardo Fradkin (U. Illinois, U-C), Joseph Maciejko (U. Alberta), Siddharth Parameswaran (UC, Irvine)
- **8/28 - 9/2 Coupled Mathematical Models for Physical and Biological Nanoscale Systems:** Luis Bonilla (U. Carlos III de Madrid), Efthimios Kaxiras (Harvard), Roderick Melnik (Wilfrid Laurier)

### SEPTEMBER

- **9/4 - 9/9 Computational Complexity:** Paul Beame (U. Washington), Russell Impagliazzo (UC, San Diego), Valentine Kabanets (Simon Fraser U.), Toni Pitassi (U. Toronto), Avi Wigderson (IAS)
- **9/11 - 9/16 Bridges between Noncommutative Algebra and Algebraic Geometry:** Michael Artin (MIT), Jason Bell (U. Waterloo), Colin Ingalls (U. New Brunswick), Lance Small (UC, San Diego), James Zhang (U. Washington)
- **9/18 - 9/23 Integrodifference Equations in Ecology: 30 Years and Counting:** Christina Cobbold (U. Glasgow), Mark Kot (U. Washington), Mark Lewis (U. Alberta), Frithjof Lutscher (U. Ottawa)
- **9/25 - 9/30 Modular Forms in String Theory:** Charles Doran (U. Alberta), Yasuhiro Goto (Hokkaido U. of Education), Ling Long (Louisiana State U.), Noriko Yui (Queen's)

### OCTOBER

- **10/2 - 10/7 Painlevé Equations and Discrete Dynamics:** Vladimir Dragovic (U. Texas at Dallas), Nalini Joshi (U. Sydney)
- **10/9 - 10/14 Modeling and Quantifying Cell Function: 25 years of Cell Mechanobiology:** Paul Janmey (U. Pennsylvania), Taher Saif (U. Illinois, U-C), Craig Simmons (U. Toronto)
- **10/16 - 10/21 New Trends in Graph Coloring:** Zdenek Dvorak (Charles U.), Bojan Mohar (SFU), Luke Postle (U. Waterloo), Robin Thomas (Georgia Tech)
- **10/23 - 10/28 Analytic and Probabilistic Combinatorics:** Miklos Bona (U. Florida), Ricardo Gomez (UNAM), Mark Ward (Purdue U.)
- **10/30 - 11/4 Theoretical and Computational Aspects of Nonlinear Surface Waves:** Mark Groves (Saarland U.), Guyenne Philippe (U. Delaware), Parau Emilian (U. East Anglia), Erik Wahlen (Lund U.)

### NOVEMBER

- **11/6 - 11/11 Random Geometric Graphs and Their Applications to Complex Networks:** Josep Diaz (Politecnica de Catalunya), Alan Frieze (Carnegie Mellon), Tobias Muller (Utrecht), Xavier Perez-Gimenez (Ryerson), Pawel Pralat (Ryerson), Nick Wormald (Monash)
- **11/13 - 11/18 Permutation Groups:** Cheryl Praeger (U. Western Australia), Katrin Tent (U. Muenster), Donna Testerman (EPFL), George Willis (U. Newcastle)
- **11/20 - 11/25 Mathematical Biology for Understanding Emerging Infectious Diseases at the Human-Animal-Environment Interface:** Fisman David (U. Toronto), Amy Greer (U. Guelph), Jianhong Wu (York)
- **11/27 - 12/2 Fifth Parallel-in-time Integration Workshop:** Matthew Emmett (Berkeley Lab), Martin Gander (U. Genève), Ronald Haynes (Memorial U.), Rolf Krause (U. Svizzera), Michael Minion (Berkeley Lab)

### DECEMBER

- **12/4 - 12/9 Analytic Versus Combinatorial in Free Probability:** James Mingo (Queen's), Alexandru Nica (U. Waterloo), Roland Speicher (Saarland U.), Dan Voiculescu (Berkeley)

**BIRS also hosts Focused Research Groups, Research in Teams, Summer Schools, and 2-Day Workshops. Please visit [www.birs.ca](http://www.birs.ca)**



# Casa Matemática Oaxaca Oaxaca, Mexico



### MAY

- **5/1 - 5/6 Algebraic, Tropical, and Nonarchimedean Analytic Geometry of Moduli Spaces:** Matthew Baker (Georgia Tech), Melody Chan (Harvard), David Jensen (U. Kentucky), Sam Payne (Yale)
- **5/8 - 5/13 Flat Surfaces and Dynamics of Moduli Space:** Jayadev Atreyah (U. Illinois), Martin Möller (Goethe, Frankfurt), Ferran Valdez (UNAM)
- **5/15 - 5/20 Black Holes' New Horizons:** Valeri Frolov (U. Alberta), Don Page (U. Alberta)
- **5/22 - 5/27 Stochastic Analysis and Mathematical Finance - A Fruitful Partnership:** Constantinos Kardaras (London School of Economics), Walter Schachermayer (U. Vienna), Gordan Zitkovic (U. Texas at Austin)
- **5/29 - 6/3 Dirichlet-to-Neumann Maps: Spectral Theory, Inverse Problems and Applications:** Michael Levitin (U. Reading), Adrian Nachman (U. Toronto), Lauri Oksanen (U. College London), Iosif Polterovich (U. Montréal)

### JUNE

- **6/5 - 6/10 Computing the Universe: At the Intersection of Computer Science and Cosmology:** Arif Babul (U. Victoria), Andrew Benson (Carnegie Institution for Science), George Lake (U. Zurich), Norman Murray (U. Toronto), Tom Quinn (U. Washington), James Wadsley (McMaster)
- **6/12 - 6/17 Integrability and Near-Integrability in Mechanics and Geometry:** Boris Khesin (U. Toronto), Sergei Tabachnikov (Penn State), Vadim Zarnitsky (U. Illinois, U-C)
- **6/19 - 6/24 Coherent Structures in PDEs and Their Applications:** Panayotis Kevrekidis (U. Massachusetts, Amherst), Andrea Bertozzi (UCLA), Ricardo Carretero (San Diego State U.), Theodore Kolokolnikov (Dalhousie), Paul Newton (USC), David Uminsky (U. San Francisco)

- **6/26 - 7/1 Random Structures in High Dimensions:** David Brydges (U. British Columbia), Frank den Hollander (U. Leiden and EURANDOM), Vladas Sidoravicius (IMPA)

### JULY

- **7/31 - 8/5 Stochastic and Deterministic Models for Evolutionary Biology:** Vincent Calvez (École normale supérieure de Lyon), Mark Kirkpatrick (U. Texas), Sylvie Méléard (École Polytechnique), Sarah Otto (U. British Columbia), Gaël Raoul (École Polytechnique)

### AUGUST

- **8/7 - 8/12 Computational Algebra and Geometric Modeling:** Laurent Buse (Institute for Research in Computer Science and Automation), Ron Goldman (Rice U.), Hal Schenck (U. Illinois, U-C)
- **8/14 - 8/19 Modular Categories--Their Representations, Classification, and Applications:** Siu-Hung Ng (Louisiana State U.), Dmitri Nikshych (U. New Hampshire), Eric Rowell (Texas A&M), Zhenghan Wang (UC, Santa Barbara)
- **8/21 - 8/26 Women in Mathematics in Latin America: Barriers, Advancements and New Perspectives:** Luis Ramiro Piñeira (Cuban Mathematical Society), Lilliam Alvarez Diaz (Cuban Academy of Sciences), Gabriela Araujo (Sociedad Mexicana de Matemática), Patricio Felmer (U. Chile), Neal Koblitz (U. Washington), Ann Koblitz (Arizona State U.)
- **8/28 - 9/2 Models and Algorithms for Crowds and Networks:** Elisa Celis (EPFL), Yiling Chen (Harvard), Panos Ipeirotis (New York U.), Dan Weld (U. Washington)

### SEPTEMBER

- **9/4 - 9/9 Mathematical Problems of Orientationally Ordered Soft Solids:** Antonio DeSimone (International School for Advanced Studies), Len Pismen (Technion), Alejandro Rey (McGill)
- **9/11 - 9/16 Set Theory and its Applications in Topology:** Michael Hrusak (UNAM), Justin Tatch Moore (Cornell), Stevo Todorcevic (U. Toronto)
- **9/18 - 9/23 Analysis and Dynamics:** Neil Dobbs (U. Helsinki), Jacek Graczyk (U. Paris-Sud), Liviana Palmisano (Polish Academy of Sciences)
- **9/25 - 9/30 Asymptotic Patterns in Variational Problems: PDE and Geometric Aspects:** Thomas Bartsch (U. Giessen), Norman Dancer (U. Sydney), Angela Pistoia (U. Roma La Sapienza), Susanna Terracini (U. Torino)

### OCTOBER

- **10/16 - 10/21 Applied Harmonic Analysis, Massive Data Sets, Machine Learning, and Signal Processing:** Emmanuel Candes (Stanford), Ronald Coifman (Yale), Amit Singer (Princeton), Thomas Strohmer (UC, Davis)
- **10/23 - 10/28 Transversal, Helly and Tverberg type Theorems in Geometry, Combinatorics and Topology III:** Imre Bárány (Alfréd Rényi), Luis Montejano (UNAM), Deborah Oliveros (UNAM), János Pach (EPFL), Emo Welzl (ETH, Zürich)
- **10/30 - 11/4 Sparse Interpolation, Rational Approximation and Exponential Analysis:** Annie Cuyt (U. Antwerpen), George Labahn (U. Waterloo), Avram Sidi (Technion)

### NOVEMBER

- **11/6 - 11/11 Stable Processes:** Davar Khoshnevisan (U. Utah), Alexey Kuznetsov (York), Andreas Kyprianou (U. Bath), Juan Carlos Pardo Millán (CIMAT)
- **11/13 - 11/18 Interval Analysis and Constructive Mathematics:** Douglas Bridges (U. Canterbury), Baker Kearfott (U. Louisiana at Lafayette), Vladik Kreinovich (U. Texas at El Paso), Patricia Melin (Tijuana Institute of Technology), Helmut Schwichtenberg (Ludwig-Maximilians)
- **11/27 - 12/2 Complexity and Analysis of Distributed Algorithms:** Hagit Attiya (Technion), Sergio Rajsbaum (UNAM), Philipp Woelfel (U. Calgary)

### DECEMBER

- **12/4 - 12/9 Algorithmic Randomness Interacts with Analysis and Ergodic Theory:** Jeremy Avigad (Carnegie Mellon U.), Joseph S. Miller (U. Wisconsin-Madison), Andre Nies (U. Auckland)
- **12/11 - 12/16 Geometric and Spectral Methods in Partial Differential Equations:** Pierre Albin (U. Illinois, U-C), Jesse Gell-Redman (Johns Hopkins), Richard Melrose (MIT), Pablo Suarez Serrato (UNAM)

**Casa Matemática Oaxaca is the new BIRS-affiliated mathematics research centre in Oaxaca, Mexico. For more information visit [www.birs.ca/cmo](http://www.birs.ca/cmo)**