

Banff International Research Station for Mathematical Innovation and Discovery



2019 Calendar



Casa Matemática Oaxaca Centro de investigación y enseñanza



JANUARY

- 1/13 – 1/18 **Models and Algorithms for Sequential Decision Problems under Uncertainty:** Vineet Goyal (Columbia U.), Daniel Kuhn (EPFL), Chaithanya Bandi (Northwestern U.)
- 1/20 – 1/25 **Representation Theory Connections to (q,t)-Combinatorics:** Mike Zabrocki (York U.), François Bergeron (UQAM), Jim Haglund (U. of Pennsylvania)
- 1/27 – 2/1 **Optimal Transport Methods in Density Functional Theory:** Mathieu Lewin (U. Paris Dauphine), Paola Gori Giorgi (Vrije U. Amsterdam), Brendan Pass (U. of Alberta)

FEBRUARY

- 2/3 – 2/8 **The role of Genomics and Metagenomics in Human Health:** Iuliana Ionita-Laza (Columbia U.), Hongzhe Lee (U. of Pennsylvania), Lei Sun (U. of Toronto), Lluís Quintana-Murci (Pasteur Institute)
- 2/10 – 2/15 **Computational Light Transport:** Gordon Wetzstein (Stanford U.), Kyros Kutulakos (U. of Toronto), Todd Zickler (Harvard U.)
- 2/17 – 2/22 **Statistical Analysis of Large Administrative Health Databases:** Robert Platt (McGill U.), Grace Yi (U. of Waterloo), Joan Hu (Simon Fraser U.), Sherri Rose (Harvard U.)
- 2/24 – 3/1 **Frontiers in Single-cell Technology, Applications and Data Analysis:** Quan Long (U. of Calgary), Jie Peng (U. of California-Davis), Pei Wang (Icahn School of Medicine at Mount Sinai)
- 2/24 – 3/1 **Isogeometric Splines: Theory and Applications:** John Evans (U. of Colorado Boulder), Bert Juettler (Johannes Kepler U.), Giancarlo Sangalli (U. of Pavia)

MARCH

- 3/3/ - 3/8 **Phase-Field Models of Fracture:** Blaise Bourdin (Louisiana State U.), Laura De Lorenzis (Technische U. Braunschweig), Masato Kimura (Kanazawa U.)
- 3/10 – 3/15 **Asymptotic Algebraic Combinatorics:** Igor Pak (U. of California-Los Angeles), Greta Panova (U. of Pennsylvania), Alejandro Morales (U. of Massachusetts Amherst), Dan Romik (U. of California-Davis)
- 3/17 – 3/22 **Mathematical Criminology and Security:** Martin Short (Georgia Tech), David Lloyd (U. of Surrey), Theodore Kolokolnikov (Dalhousie U.)
- 3/24 – 3/29 **The Topology of Nucleic Acids:** Christine Soteris (U. of Saskatchewan), Javier Arsuaga (U. of California-Davis), Mario Eudave-Muñoz (UNAM), Koya Shimokawa (Saitama U.)
- 3/31 – 4/5 **Multivariable Spectral Theory and Representation Theory:** Raul Curto (U. of Iowa), Michael Stessin (U. at Albany), Zeljko Cuckovic (U. of Toledo)

APRIL

- 4/7 – 4/12 **New and Evolving Roles of Shrinkage in Large-Scale Prediction and Inference:** Gourab Mukherjee (U. of Southern California), Edward George (U. of Pennsylvania), Eric Marchand (U. of Sherbrooke), Debashis Paul (U. of California-Davis)
- 4/14 – 4/19 **Probing the Earth and the Universe with Microlocal Analysis:** Leo Tzou (U. of Sydney), Gunther Uhlmann (U. of Washington)
- 4/21–4/26 **Quantum Walks and Information Tasks:** Luis Velazquez (Universidad de Zaragoza), Luc Vinet (U. of Montreal), Harry Bruhman (U. of Amsterdam), Manuel D. de la Iglesia (UNAM)
- 4/28 – 5/3 **Modelling of Thin Liquid Films-Asymptotic Approach vs. Gradient Dynamics:** Uwe Thiele (U. Münster), Neil Balmforth (U. of British Columbia), Andrew Hazel (U. of Manchester), Chun Liu (Illinois Tech)

MAY

- 5/5 – 5/10 **Nonlinear Geometric PDE's:** Angela Pistoia (Sapienza Università di Roma), Monica Musso (Pontificia Universidad Católica de Chile), Pierpaolo Esposito (Università di Roma Tre)
- 5/12 – 5/17 **Women In Numerical Methods for PDEs and their Applications:** Mary-Catherine Kropinski (Simon Fraser U.), Marsha Berger (New York U.), Anna-Karin Tornberg (KTH Royal Institute of Technology)
- 5/19 – 5/24 **Optimal Neuroethology of Movement and Motor Control:** Art Kuo (U. of Calgary), Alaa Ahmed (U. of Colorado-Boulder), Manoj Srinivasan (Ohio State U.), Anna Ruina (Cornell U.)
- 5/26 – 5/31 **Geometry of Real Polynomials, Convexity and Optimization:** Levent Tunçel (U. of Waterloo), Greg Blekherman (Georgia Tech), Daniel Plaumann (TU Dortmund U.), Cynthia Vinzant (North Carolina State U.)

JUNE

- 6/2 – 6/7 **Toward a Comprehensive, Integrated Framework for Advanced Statistical Analyses of Observational Studies:** Michal Abrahamowicz (McGill U.), Richard Cook (U. of Waterloo), Willi Sauerbrei (U. of Freiburg), Marianne Huebner (Michigan State U.)
- 6/9 – 6/14 **Women In Analysis:** Donatella Danielli (Purdue U.), Irina Mitrea (Temple U.)
- 6/16 – 6/21 **Bridging Cellular and Tissue Dynamics from Normal Development to Cancer:** Andreas Buttienschoen (U. of Alberta), Elisabeth Rens (Centrum Wiskunde & Informatica), Leah Edelstein-Keshet (U. of British Columbia)
- 6/23 – 6/28 **Reconstruction Methods for Inverse Problems:** Elena Beretta (Politecnico di Milano), Uri Ascher (U. of British Columbia), Otmar Scherzer (U. of Vienna), Luminita Vese (U. of California-Los Angeles)
- 6/30 – 7/5 **Advances in Dispersive Equations: Challenges & Perspectives:** Slim Ibrahim (U. of Victoria), Stephen Gustafson (U. of British Columbia), Kenji Nakanishi (Osaka U.)

JULY

- 7/7 – 7/12 **Algebraic Techniques in Computational Complexity:** Valentine Kabanets (Simon Fraser U.), Avi Wigderson (Institute for Advanced Study), Russell Impagliazzo (U. of California-San Diego), Toniann Pitassi (U. of Toronto)
- 7/14 – 7/19 **The Many Faceted Connes Embedding Problem:** Mary Beth Ruskai (U. of Vermont), Marius Junge (U. of Illinois at Urbana-Champaign), Vern Paulsen (U. of Waterloo), Carlos Palazuelos (Universidad Complutense de Madrid)
- 7/21 – 7/26 **Algebraic and Statistical ways into Quantum Resource Theories:** Gilad Gour (U. of Calgary), Francesco Buscemi (Nagoya U.), Eric Chitambar (Southern Illinois U.)
- 7/28 – 8/2 **New Mathematical Methods for Complex Systems in Ecology:** Andrew Morozov (U. of Leicester), Alan Hastings (U. of California-Davis), Mark Lewis (U. of Alberta)

AUGUST

- 8/4 – 8/9 **From Many Body Problems to Random Matrices:** Tai-Peng Tsai (U. of British Columbia), Paul Bourgade (New York U.), Laszlo Erdos (IST Austria), Jeremy Quastel (U. of Toronto)
- 8/11 – 8/16 **Convex Integration in PDEs, Geometry, and Variational Calculus:** Emil Wiedemann (Leibniz U. Hannover), Marta Lewicka (U. of Pittsburgh), Eduard Feireisl (Academy of Sciences of the Czech Republic)
- 8/11 – 8/16 **Mutations: Mirror Symmetry, Deformations, and Combinatorics:** Johannes Hofscheier (McMaster U.), Alexander Kasprzyk (U. of Nottingham), Akihiro Higashitani (Kyoto Sangyo U.)
- 8/18 – 8/23 **Charge and Energy Transfer Processes: Open Problems in Open Quantum Systems:** Marco Merkli (Memorial U.), Dvira Segal (U. of Toronto), Aaron Kelly (Dalhousie U.)
- 8/25 – 8/30 **Groups and Geometries:** Martin Liebeck (Imperial College), Inna Capdeboscq (U. of Warwick), Bernhard Muehlherr (U. of Giessen)

SEPTEMBER

- 9/1 – 9/6 **Probabilistic and Extremal Combinatorics:** Benny Sudakov (ETH Zurich), Penny Haxell (U. of Waterloo), Michael Krivelevich (Tel Aviv U.)
- 9/8 – 9/13 **Topology and Measure in Dynamics and Operator Algebras:** David Kerr (Texas A&M), Thierry Giordano (U. of Ottawa), George Elliott (U. of Toronto), Xin Li (Queen Mary U. of London)
- 9/15 – 9/20 **Random Matrix Products and Anderson Localization:** Anton Gorodetski (U. of California-Irvine), David Damanik (Rice U.)
- 9/15 – 9/20 **Emerging Statistical Challenges and Methods for Analysis of Human Microbiome Data:** Yijuan Hu (Emory U.), Hong Gu (Dalhousie U.), Shyamal Peddada (U. of Pittsburgh), Michael Wu (Fred Hutchinson Cancer Research Center)
- 9/22 – 9/27 **New Challenges in Energy Markets - Data Analytics, Modelling and Numerics:** Tony Ware (U. of Calgary), Michael Coulon (U. of Sussex), Carlos Vasquez Cendon (Universidade da Coruna)
- 9/29 – 10/4 **Classification Problems in von Neumann Algebras:** Adrian Ioana (U. of California-San Diego), Jesse Peterson (Vanderbilt U.)

OCTOBER

- 10/6 – 10/11 **Herglotz-Nevanlinna Theory Applied to Passive, Causal and Active Systems:** Aaron Welters (Florida Tech), Annemarie Luger (Stockholm U.), Mats Gustafsson (Lund U.), Andrea Alu (U. of Texas-Austin)
- 10/13 – 10/18 **Physics-Dynamics Coupling in Earth System Models:** Nicholas Kevlahan (McMaster U.), Peter Lauritzen (National Center for Atmospheric Research)
- 10/13 – 10/18 **Spaces of Embeddings: Connections and Applications:** Dev Sinha (U. of Oregon), Robin Koytcheff (U. of Louisiana at Lafayette), Ryan Budney (U. of Victoria), Ismar Volic (Wellesley College)
- 10/20 – 10/25 **Women in Commutative Algebra:** Emily Witt (U. of Kansas), Karen Smith (U. of Michigan), Sandra Spiroff (U. of Mississippi), Irena Swanson (Reed College)
- 10/27 – 11/1 **Bridging the Gap between Kahler and non-Kahler Complex Geometry:** Dan Popovici (U. Paul Sabatier), Vestislav Apostolov (UQAM), Duong H. Phong (Columbia U.), Anna Fino (U. Torino)

NOVEMBER

- 11/3 – 11/8 **Unifying 4-Dimensional Knot Theory:** Jeffrey Meier (U. of Georgia), Alex Zupan (U. of Nebraska-Lincoln), Scott Carter (U. of South Alabama)
- 11/10 – 11/15 **Interactions between Brauer Groups, Derived Categories and Birational Geometry of Projective Varieties:** Nathan Grieve (Michigan State U.), Colin Ingalls (U. of New Brunswick)
- 11/17 – 11/22 **Dimers, Ising Model, and their Interactions:** Gourab Ray (U. of Victoria), Hugo Duminil-Copin (IHES), Dubedat Julien (Columbia U.)
- 11/24 – 11/29 **Theoretical Foundations of Relativistic Hydrodynamics:** Michal P. Heller (Max Planck Institute for Gravitational Physics), Ulrich Heinz (Ohio State U.), Guy Moore (Technische U. Darmstadt)

DECEMBER

- 12/1 – 12/6 **Challenges in Mathematical and Computational Modeling of Complex Systems:** Christina Mair (U. of Pittsburgh), Paul Grunewald (Pacific Institute for Research and Evaluation), Carlos Castillo-Chavez (Arizona State U.), Lance A. Waller (Emory U.)
- 12/8 – 12/13 **Discrete Subgroups of Lie Groups:** Dave Witte Morris (U. of Lethbridge), Michael Kapovich (U. of California-Davis), Gregory Margulis (Yale U.), Gregory Soifer (Bar-Ilan U.)

APRIL

- 4/28 – 5/3 **Geometrical Tools for String Cosmology:** Iyonna Zavala (Swansea U.), Xenia de la Ossa (U. of Oxford), Magdalena Larfors (Uppsala U.)

MAY

- 5/5 – 5/10 **G₂ Geometry and Related Topics:** Jason Lotay (U. College London), Spiro Karigiannis (U. of Waterloo), Conan Leung (Chinese U. of Hong Kong)
- 5/12 – 5/17 **Symbolic Dynamical Systems:** Ricardo Gómez Aíza (UNAM), Ronnie Pavlov (U. of Denver), Anthony Quas (U. of Victoria), Michael Schraudner (U. of Chile)
- 5/19 – 5/24 **Scaling Limits of Dynamical Processes on Random Graphs:** Grzegorz Rempala (Ohio State U.), Heinz Koepl (Technische Universität Darmstadt), Rick Durrett (Duke U.), Remco van der Hofstad (Eindhoven U. of Technology)
- 5/26 – 5/31 **Flat Surfaces and Dynamics on Moduli Space, II:** Ferran Valdez (UNAM), Barak Weiss (Tel Aviv U.), Kasra Rafi (U. of Toronto), Anton Zorich (Université Pierre Diderot)

JUNE

- 6/2 – 6/7 **Topological Phases of Interacting Quantum Systems:** Hermann Schulz-Baldes (Universität Erlangen-Nurnberg), Emil Prodan (Yeshiva U.), Carlos Villegas-Blas (UNAM)
- 6/9 – 6/14 **Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications:** Dario Bambusi (Università degli studi di Milano), Benoît Grébert (Université de Nantes), Carlos Villegas-Blas (UNAM), Michele Correggi (Sapienza U. of Rome)
- 6/16 – 6/21 **Ordered Groups and Rigidity in Dynamics and Topology:** Adam Clay (U. of Manitoba), Steven Boyer (UQAM), Kathryn Mann (Brown U.), Cristóbal Rivas (Universidad de Santiago de Chile)
- 6/23 – 6/28 **Women in Geometry 2:** Catherine Searle (Wichita State U.), Maia Fraser (U. of Ottawa), Elizabeth Stanhope (Lewis and Clark College), Guofang Wei (U. of California-Santa Barbara)

JULY

- 7/28 – 8/2 **Time-like Boundaries in General Relativistic Evolution Problems:** Olivier Sarbach (Universidad Michoacana de San Nicolás de Hidalgo), Helmut Friedrich (Max Planck Institute for Gravitational Physics), Oscar Reula (Universidad Nacional de Córdoba), Piotr Bizon (Jagiellonian U.)

AUGUST

- 8/4 – 8/9 **Set theory of the Reals:** Michael Hrusak (UNAM), Joerg Brendle (Kobe U.), Juris Steprans (York U.)
- 8/11 – 8/16 **Number Theory in the Americas:** Harald Helfgott (U. of Goettingen), Lola Thompson (Oberlin College), Moubariz Garaev (UNAM)
- 8/18 – 8/23 **Out-of-Equilibrium Processes in Evolution and Ecology:** Armita Nourmohammad (Max Planck Institute for Dynamics and Self-organization), Vijay Balasubramanian (U. of Pennsylvania), Marta Luksza (Princeton U.), Serena Bradde (City U. New York)

SEPTEMBER

- 9/1 – 9/6 **Tilting Theory, Singularity Categories, & Noncommutative Resolutions:** Osamu Iyama (Nagoya U.), José Antonio de la Peña (CIMAT), Henning Krause (Bielefeld U.)
- 9/8 – 9/13 **Tropical Methods in Real Algebraic Geometry:** Lucia Lopez de Medrano (UNAM), Brugallé Erwan (Université de Nantes), Shaw Kristin (Max Planck Institut für Mathematik in der Naturwissenschaft)
- 9/15 – 9/20 **Reverse Mathematics of Combinatorial Principles:** Damir Dzhafarov (U. of Connecticut), Peter Cholak (U. of Notre Dame), Denis Hirschfeldt (U. of Chicago)
- 9/22 – 9/27 **Multi-Stage Stochastic Optimization for Clean Energy Transition:** Michel De Lara (Ecole des Ponts ParisTech), Onésimo Hernández-Lerma (Cinvestav-IPN), Alejandro Jofre (U. of Chile), Riadh Zorgati (Electricité de France)
- 9/29 – 9/4 **Soft Packings, Nested Clusters, and Condensed Matter:** Egon Schulte (Northeastern U.), Karoly Bezdek (U. of Calgary), Marjorie Senechal (Smith College)

OCTOBER

- 10/6 – 10/11 **Helly and Tverberg type Theorems:** Deborah Oliveros (UNAM), Imre Bárány (Alfred Renyi Institute), Luis Montejano (National U. of Mexico at Queretaro), Janos Pach (EPFL)
- 10/20 – 10/25 **Modularity and Moduli Spaces:** Brandon Levin (U. of Arizona), Rebecca Bellovin (Imperial College London), Matthew Emerton (U. of Chicago), David Savitt (John Hopkins U.)
- 10/27 – 11/1 **Computational Harmonic Analysis and Data Science:** Thomas Strohmer (U. of California-Davis), Emmanuel Candes (Stanford U.), Ronald Coifman (Yale U.), Amit Singer (Princeton U.)

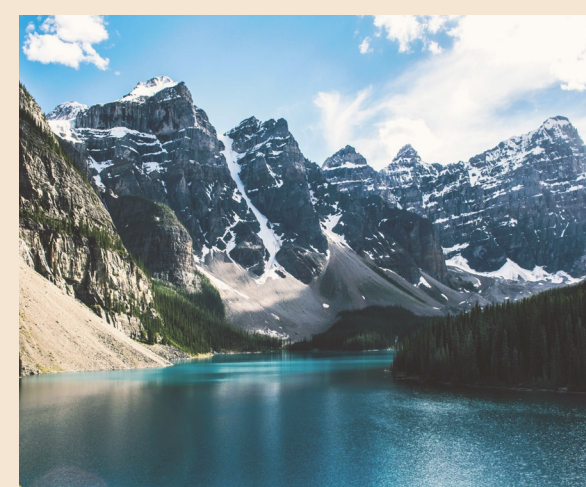
NOVEMBER

- 11/3 – 11/8 **Recent Developments in Mathematical and Computational Biomedicine:** Tatiana T. Marquez Lago (U. of Alabama-Birmingham), Kevin Burrage (U. of Oxford), Grant Lythe (U. of Leeds)
- 11/10 – 11/15 **Zero-Sum Ramsey Theory: Graphs, Sequences and More:** Amanda Montejano (UNAM), Adriana Hansberg (UNAM), Yair Caro (U. of Haifa-Oranin)
- 11/17 – 11/22 **Moduli and Invariants:** Eduardo Gonzalez (U. of Massachusetts-Boston), Artan Sheshmani (Harvard U.), Pablo Solis (Stanford U.)

DECEMBER

- 12/1 – 12/6 **Algebraic and Geometric Categorification:** Alistair Savage (U. of Ottawa), Jonathan Brundan (U. of Oregon), Monica Vazirani (U. of California-Davis), Ben Webster (U. of Waterloo)

BIRS also hosts Focused Research Groups, Research in Teams, Summer Schools, & 2-Day Workshops. Please visit www.birs.ca



Casa Matemática Oaxaca is a BIRS-affiliated mathematics research centre in Oaxaca, Mexico. For more information visit www.birs.ca/cmo

