2025
YEAR IN REVIEW

Pacific Institute *for the* Mathematical Sciences

Pacific Institute *for the* Mathematical Sciences

The Pacific Institute for the Mathematical Sciences (PIMS) was founded in 1996. It is a consortium of universities in Western Canada along with the University of Washington.

Member Universities include: Simon Fraser University, University of Alberta, University of British Columbia, University of Victoria, University of Calgary, University of Lethbridge, University of Manitoba, University of Regina, University of Saskatchewan, and University of Washington. Affiliate Institutions: Portland State University, the University of Northern British Columbia, and First Nations University.

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ADVANCING THE MATHEMATICAL SCIENCES.

The mandate for **Pacific Institute for the Mathematical Sciences (PIMS)** is to promote excellent research and applications of the mathematical sciences, to facilitate the training of highly qualified personnel, to create an equitable, diverse and inclusive community in the mathematical sciences, to enrich public awareness of and education in mathematics and to create partnerships with similar organizations around the world.

PIMS is governed by a Board of Directors composed of senior academic leaders from member universities, along with distinguished scientists and industry representatives. Scientific programming is guided by an independent Scientific Review Panel of internationally renowned mathematical scientists, ensuring excellence and impact across all supported activities.

2025 A Year of Growth, Renewal, and Global Connection

From the Directorate

It was a good year at PIMS, exciting in many regards and marked by thoughtful leadership transitions, strengthened global partnerships, and continued investment in the mathematical sciences.

The Institute experienced a year of renewal in governance, including the appointment of a new Chair of the Board, **Walter Dixon**, following the longstanding leadership of **Engin Özberk**, who continues to provide guidance in an emeritus capacity. The Directorate also welcomed **Deanna Needell** as Co-Director, Programs — a role redesigned from the former Co-Director, International position held by Gabriel Paternain — reflecting a broader focus on the Institute's programming and strategic initiatives.

Through our Collaborative Research Groups, PIMS Research Networks, and thematic initiatives like the Mathematics for the Future program, we continued to convene leading researchers to address foundational and emerging challenges in the mathematical sciences, reinforcing our role as a hub for high-impact scientific exchange.

Another important milestone was the renewal of support from the Simons Foundation. This partnership strengthens PIMS' ability to support research activity across the network, expand opportunities for postdoctoral scholars, enhance international collaboration and impact, and grow programming across member institutions and globally.

We also deepened our global partnerships through sustained engagement with CNRS (French National Centre for Scientific Research - Centre national de la recherche scientifique) in France, expanded collaboration across the Pacific Rim and Latin America, and strengthened research ties with institutions in Africa.

"We are proud of the dedicated staff, researchers, and partners whose efforts make this work possible. Together, we look forward to strengthening and advancing the mathematical sciences in Canada and beyond."

Özgür Yilmaz
PIMS Director

Through workshops, research exchanges, and international dialogue, including planning for future France–Western Canada initiatives, PIMS reinforced its role as a connector across continents and disciplines.

Özgür Yilmaz
PIMS Director

Deanna Needell
Co-Director, Programs

Kristine Bauer
Co-Director, Industry

Our investment in early-career researchers continued through our postdoctoral programs, cohort-building initiatives like the PDF Summit, and national visibility opportunities such as the Emergent Research seminar series. At the same time, we advanced equity, diversity, and inclusion through programs like PIMS-BIRS Team Up, First Year Interest Groups, and support for Indigenous-led events, including the CRM-PIMS-AARMS Special Session on Indigenous Voices in Mathematics.

We continued connecting mathematical talent with Canadian industry through our signature M2PI program, including the launch of the Case Studies Seminar. Strong demand for these initiatives underscores the growing importance of mathematical expertise in Canada's economic and technological landscape.

These developments reflect a year of meaningful progress and renewed momentum, positioning PIMS to continue advancing research excellence, global engagement, and collaboration across the mathematical sciences community.

"Looking forward in 2026, we have a number of initiatives that will strengthen research collaboration, training, and community-building across the mathematical sciences."

Deanna Needell
PIMS Co-Director, Programs

2025 HIGHLIGHTS

"The Launch of the CRG on Diagram Categories in Homotopy Theory (2025–2028)"

In 2025, PIMS launched a new Collaborative Research Group on Diagram Categories in Homotopy Theory, a three-year initiative bringing together algebraic topologists across five institutions to advance research in functor calculus, equivariant homotopy theory, and polyhedral products.

3MC-PIMS-IDMS-ICMS Summer School on Quantitative Molecular & Cellular Biology

As part of the Increasing Diversity in Mathematical Sciences program, PIMS hosted the 3MC-PIMS-IDMS-ICMS Summer School on Quantitative Molecular and Cellular Biology. Participants were graduate students and postdoctoral fellows from Canada and Africa. The summer school aimed to equip students with essential tools and methodologies for investigating complex molecular and cellular questions. Courses covered techniques relevant to structural, molecular, and cellular biology, all driven by specific biological questions. Cancer was used as an integrative example throughout the program. The school structure included lectures and project work.

Big Data Before Data Science Conference

Together with the International Centre for Mathematical Sciences (ICMS), PIMS held the Big Data Before Data Science Conference exploring how legacies of past data practices continue to inform the present. Data science today is inextricably bound to digital technologies of analysis. Similarly, the paper tools that originated in the 19th century informed the collection, analysis, and communication of data. In light of the continuing impact of the history of statistics and data science on its current practices, participants considered how historical insight informs contemporary practices and principles.

PIMS as an International Research Laboratory of the Centre National de la Recherche Scientifique (CNRS)

2025 marked another strong year for PIMS as an International Research Laboratory of CNRS. This partnership continues to strengthen knowledge exchange between western Canada and France while deepening long-term research connections across institutions. PIMS welcomed two CNRS visitors during the year, further enriching collaborative activity across the network. In addition, the PIMS–CNRS Fellowship program supports faculty at PIMS institutions in undertaking extended research visits in France, fostering sustained international engagement. Together, these initiatives reflect the continued growth and impact of the PIMS–CNRS partnership in advancing research excellence through global collaboration.

M2PI Growth & Development

In 2025, M2PI launched a Virtual Case Studies Seminar Series aimed at highlighting collaborative research between members of the PIMS community—including graduate students, postdoctoral fellows, and faculty—and partners across industry, government, non-profit organizations, and other sectors in western Canada. The series showcases the application of mathematical tools to real-world challenges, fosters knowledge exchange, and supports the development of new interdisciplinary partnerships.

2025 PIMS by Numbers

25 Conferences & Workshops

4 summer schools

3 online seminar series

32 department seminar series & colloquia

12 education & outreach activities

6 Distinguished Lecture Series

6 Collaborative Research Groups & Research Networks

2025 HIGHLIGHTS

Experiences Across Mathematics (DREAMs) Institute

In 2025, we hosted the Diversity in Research Experiences Across Mathematics (DREAMs) Institute, a three-week summer enrichment program designed for senior high school students. The program provides an opportunity to explore the study of mathematics at the university level and supports one of its core goals: helping students envision future pathways in mathematics and STEM more broadly. Students are introduced to foundational areas of mathematics while engaging with mentors and peers in a supportive learning environment.

Math Summer School for Elementary Teachers

In 2025, PIMS delivered the Math Summer School for Elementary Teachers, providing participants with opportunities to strengthen their mathematical knowledge, explore real-world applications, and develop effective teaching strategies. Teachers collaborated to design classroom-ready lesson materials and shared best practices. This approach fostered ongoing collaboration and helped build a sustainable, school-wide culture of enthusiasm and confidence in mathematics teaching.

PIMS/BIRS Team Up! Pathways to Inclusive Research

In 2025, PIMS and the Banff International Research Station (BIRS) delivered the PIMS/BIRS Team Up! Pathways to Inclusive Research program, supporting in-person collaboration among teams of mathematical scientists. The program prioritizes researchers whose work has been impacted by barriers such as limited access to funding. It supports women, gender-diverse and minority groups, Indigenous scholars, and early-career researchers. In 2025, PIMS funded four collaborative research teams.

Mathematical Foundations of Quantum Advantage Workshop

PIMS hosted the Mathematical Foundations of Quantum Advantage workshop, bringing together researchers to explore fundamental questions at the intersection of pure mathematics and quantum computing. The workshop uniquely connected diverse communities, including both theoretical and application-driven perspectives, fostering dialogue across areas that rarely interact.

PIMS-CRM Probability Summer School

The 2025 PIMS–CRM Summer School in Probability brought together graduate students and early-career researchers for an intensive four-week program on contemporary developments in probability theory. The program featured courses by Tom Hutchcroft and Mathav Murugan, alongside mini-courses from Nathanael Berestycki, Nina Holden, and Tianyi Zheng, covering topics such as percolation, random walks, and Liouville quantum gravity.

2025 PIMS Participation by Numbers

3,499 Conferences & Workshops

282 Summer Schools (outside CRGs/PRNs)

490 CRG/PRN Events

3,449 Lecture Seminar Series

140 Industrial Activities

848 Thematic & focus programs & other activities

NEWS & ANNOUNCEMENTS

Throughout 2025, PIMS continued to strengthen its leadership and programs to advance research excellence, develop talent, and deepen partnerships across academia, industry, and the public sector.

Strengthening Leadership & Advancing Impact

Leadership That Advances Impact

Prof. Deanna Needell (University of California, Los Angeles) was appointed Co-Director, Programs, bringing international expertise to the strategic direction of PIMS' research portfolio. She oversees programs that cultivate vibrant research communities and guides investment in high-impact thematic areas, including quantum science, climate, and oceans. She also leads the PIMS Postdoctoral Fellowship competition, a cornerstone of talent development at PIMS.

Prof. Raymond Spiteri (University of Saskatchewan) joined PIMS as Co-Director, Careers, leading initiatives that prepare highly trained mathematicians for impactful careers. His work strengthens partnerships with industry, government, and academia, while expanding professional development opportunities for postdoctoral fellows and advancing industrial research programs across the PIMS network.

Continuity, Stewardship, & Strong Partnerships

Prof. **Kristine Bauer** concluded her term as Co-Director, Industry, having played a key role in expanding industry engagement and contributing to PIMS' long-term strategic planning. Her leadership supported initiatives such as the Math to Power Industry (M2PI) workshop and the PIMS postdoctoral program. She continues to advise PIMS, ensuring continuity and thoughtful stewardship during a period of growth.

Recognized Excellence in Education & Outreach

PIMS' commitment to education and community impact was underscored when **Dr. Melania Alvarez**, BC Education Coordinator at PIMS, received the 2025 IEEE (Institute of Electrical and Electronics Engineers) Educational Activities Board Meritorious Achievement Award in Pre-University Education. The award recognizes her leadership in inclusive and culturally responsive mathematics and STEM education, empowering students and teachers—particularly within Indigenous communities—through mentorship and hands-on learning.

2025
PRIZES & AWARDS

2025 CRM-Fields-PIMS Prize
Leah Edelstein-Keshet, University of British Columbia

Dr. Leah Edelstein-Keshet was awarded the 2025 CRM-Fields-PIMS Prize for her pioneering contributions to mathematical biology. Her work has advanced understanding of cell motility, polarization, and collective biological behaviour through the integration of mathematics, computation, and experiment. Her textbook Mathematical Models in Biology remains a foundational reference in the field. Her many honours include the Krieger–Nelson Prize, the SIAM John von Neumann Prize, and election as a Fellow of the Royal Society of Canada.

PIMS Education Prize
Darja Barr, University of Manitoba

Dr. Darja Barr was awarded the 2025 PIMS Education Prize for her outstanding contributions to mathematics education. Recognized for her leadership in innovative and inclusive teaching, she has played a key role in mentoring educators and inspiring students to engage with mathematics. The award highlights her impact in advancing public awareness and appreciation of the mathematical sciences across the PIMS community.

CAIMS/PIMS Early Career Award
Courtney Paquette, McGill University

Dr. Courtney Paquette was awarded the 2025 CAIMS/PIMS Early Career Award for her contributions to the analysis of stochastic optimization algorithms and their applications. Her research has advanced understanding of optimization in high-dimensional settings and strengthened connections between mathematical theory and modern computational challenges. This award recognizes her significant early-career impact in mathematical optimization.

PIMS/UBC Mathematical Sciences Early Career Award
Mathav Murugan, University of British Columbia

Dr. Mathav Murugan was awarded the PIMS/UBC Mathematical Sciences Early Career Award in recognition of his contributions to probability theory. An Associate Professor and Canada Research Chair at the University of British Columbia, his research has advanced the understanding of stochastic processes and related areas. A former PIMS Postdoctoral Fellow, his work reflects both research excellence and continued engagement within the PIMS community.

2025 Site Directors

UNIVERSITY OF VICTORIA
Dr. Anthony Quas

The University of Victoria hosted three PIMS postdoctoral fellows working in probability, renewable energy, and combinatorics, contributing to research activity and graduate mentoring. The Maud Menten Institute, jointly hosted with the University of Manitoba, expanded through summer schools and hybrid seminar series. PIMS also supported seminar series in Discrete Mathematics, Probability, and Women in Mathematics. UVic participated actively in the Network-Wide Courses program, with students enrolling in and contributing to courses across the PIMS network, strengthening shared graduate training.

UNIVERSITY OF CALGARY
Dr. Wenyuan Liao

The University of Calgary delivered a range of PIMS-supported research and outreach activities. The site hosted the Richard & Louise Guy Lecture and the Math to Power Industry workshop, while supporting three PIMS postdoctoral fellows. Ongoing seminar series and a PIMS Lunchbox Talk contributed to research engagement. Calgary also hosted the Alberta Mathematics Dialogue, drawing strong regional participation. Outreach efforts included support for the Calgary Youth Science Fair and continued collaboration with local mathematical communities.

UNIVERSITY OF BRITISH COLUMBIA
Dr. Brian Marcus

The University of British Columbia contributed extensively to the PIMS Network-Wide Courses program, offering advanced graduate courses across multiple mathematical areas and supporting cross-institutional enrollment. Research activity included conferences, workshops, and regular seminar series, alongside the PIMS-supported Summer School in Probability. Outreach initiatives engaged students and communities across the region. As host of PIMS Central, UBC provided space for postdoctoral fellows, visitors, seminars, and collaborative events, supporting network-wide programming and ongoing research exchange.

SIMON FRASER UNIVERSITY
Dr. Razvan C. Fetecau

Simon Fraser University hosted PIMS-supported seminar series spanning discrete mathematics, operations research, algebraic geometry, and data-focused mathematics. The site served as host for major workshops and conferences, including the Mathematical Foundations of Quantum Advantage and the Testing Gravity Conference, as well as a PIMS Board of Directors meeting. Three PIMS postdoctoral fellows and Maud Menten Institute-supported graduate students contributed to research and mentoring. Outreach activities included the Changing the Culture Conference, SFU Math Camps, and Women in Mathematics Day.

UNIVERSITY OF WASHINGTON
Dr. Jayadev Athreya

The University of Washington hosted PIMS Network-Wide Courses and supported a Summer School and Hackathon on Structure-Preserving Scientific Computing and Machine Learning. Seminar series across analysis, geometry, combinatorics, and dynamics contributed to research activity. PIMS support sustained the Washington Directed Reading Program, strengthening undergraduate mentoring and community-building. Educational programming also supported Math Teacher's Circles in Seattle, providing professional development and enrichment for regional educators.

UNIVERSITY OF ALBERTA
Dr. Eric Woolgar (outgoing)
Dr. Thomas Hillen (incoming)

The University of Alberta hosted four PIMS postdoctoral fellows across diverse research areas, contributing to training and research capacity. PIMS supported seminar series, graduate conferences, Collaborative Research Group activities, and data science engagement initiatives. Outreach programming included Math Circles, mathematics camps, student-led programs, and international competitions. Through postdoctoral appointments and competitive grants, PIMS strengthened research activity, graduate training, and community engagement.

UNIVERSITY OF SASKATCHEWAN
Dr. Steven Rayan

The University of Saskatchewan hosted the Quantum Days Satellite Series conference and continued active participation in PIMS Collaborative Research Groups. A Summer School and Hackathon on Structure-Preserving Scientific Computing and Machine Learning formed part of CRG programming. Faculty contributed to the Maud Menten Institute, and a local postdoctoral fellow received an MMI Research Accelerator Award. PIMS-supported seminar series and the Mathematics & Statistics Colloquium strengthened research activity, alongside the presence of three PIMS postdoctoral fellows.

UNIVERSITY OF MANITOBA
Dr. Stéphanie Portet

The University of Manitoba hosted multiple PIMS postdoctoral fellows and delivered a range of research and outreach activities. Academic programming included the Operator Analysis on Function Spaces conference, the 3MC–PIMS–IDMS–ICMS Summer School in coordination with the Maud Menten Institute. Outreach initiatives included Math Mania, Math Prep Workshops, school visits, and public engagement events. The site also supported First-Year Interest Groups, visiting scholars, seminar series, and network-wide colloquium participation.

UNIVERSITY OF REGINA
Dr. Allen Herman

The University of Regina launched a PIMS Collaborative Research Group on Diagram Categories in Homotopy Theory and hosted PIMS Distinguished Lectures and seminar programming. Six PIMS postdoctoral fellows contributed to research and mentoring, with several receiving travel awards. Regina postdoctoral fellows led PIMS First-Year Interest Groups, supporting graduate engagement across the network. The site hosted the Workshop on Matrices and Operators and supported participation in CanaDAM.

UNIVERSITY OF LETHBRIDGE
Dr. Nathan Ng

The University of Lethbridge hosted three PIMS postdoctoral fellows and maintained active seminar programming in number theory and combinatorics. The Collaborative Research Group on L-Functions concluded with workshops and seminar activities, and faculty organized regional and Banff-based events. Students participated in Math to Power Industry and Women in AI initiatives. Outreach programming included K–12 engagement events such as Challenge Your Brain, Spring Math Fair, and Fractals and Snowflakes, fostering early interest in mathematics.

The complete 2025 Site Directors reports are available at **PIMS.math.ca**

2025 PIMS Research Networks (PRNs)

PIMS Research Networks (PRNs) are flagship, multi-year initiatives that bring together researchers from academia, industry, government, and the public sector to address pressing global challenges. Through these large-scale collaborations, PIMS invests in mathematical research with the potential to inform policy, drive innovation, and contribute to solutions in areas such as climate resilience, sustainable resource management, public health, and equity in society. PRNs reflect PIMS' commitment to strategic, mission-driven research with broad and lasting impact.

In 2025, PIMS supported two active PIMS Research Networks (PRNs): the Maud Menten Institute and the Kantorovich Initiative.

The Maud Menten Institute hosted its Highly Qualified Personnel (HQP) Summit and Working Group meetings at the University of Alberta in July and continued to deliver an online seminar series.

The Kantorovich Initiative organized a CRM–PIMS–AARMS special session on Optimal Transport: Theory and Applications at the Joint Mathematics Meetings in Seattle and also hosted an online seminar series.

The Maud Menten Institute (2024–2027)

The Maud Menten Institute (MMI) serves as a collaborative research platform for mathematical biology across PIMS sites. By fostering close interaction between mathematicians, life scientists, and decision-makers in government, industry, and non-profit organizations, MMI strengthens the role of mathematics in advancing biological research and real-world applications. A central focus of the Institute is the development of the next generation of mathematical biologists, equipping them to make meaningful contributions both within academia and beyond, and reinforcing mathematical biology as a powerful and essential tool in the life sciences.

Kantorovich Initiative (2023–2026)

The Kantorovich Initiative advances research in optimal transport while broadening access to modern mathematical developments. What began as a Pacific Interdisciplinary Hub on Optimal Transport (PIHOT) Collaborative Research Group has grown into the first officially awarded PIMS Research Network—demonstrating both scientific excellence and community momentum. The Initiative engages researchers, students, industry professionals, policymakers, and the broader public, highlighting PIMS' ability to translate foundational mathematics into knowledge with wide-ranging relevance.

2025 Collaborative Research Groups (CRGs)

Collaborative Research Groups (CRGs) form the foundation of PIMS' research activities. These focused, multi-year collaborations connect researchers across universities and disciplines, supporting high-impact mathematical research through conferences, workshops, and the training of highly qualified personnel, including postdoctoral fellows.

In 2025 PIMS launched a new CRG, Diagram Categories in Homotopy Theory. Led by researchers from the University of Regina, Reed College, the University of Washington, the University of British Columbia (Vancouver), and the University of British Columbia (Okanagan), the group advances homotopy theory through diagram categories, with a focus on functor calculus, equivariant homotopy theory, and polyhedral products.

The group organized an online seminar series in 2025 featuring international speakers, including Niall Taggart (Queen's University Belfast).

Looking ahead, the CRG will host a summer school on homotopy colimits in 2026 and a workshop on calculi of functors in 2027. Other active PIMS CRGs included Forecasting and Mathematical Modeling for Renewable Energy, L-Functions in Analytic Number Theory, and Structure-Preserving Discretizations and Their Applications. A new CRG on Asymptotic Geometric Analysis, Convex and Discrete Geometry, and Combinatorics is set to begin in 2026.

Diagram Categories in Homotopy Theory (2025–2028)

This CRG advances research in homotopy theory through the study of diagram categories, with a focus on functor calculus, equivariant homotopy theory, and polyhedral products. Building on existing strengths within the PIMS network, the group fosters new collaborations, trains early-career researchers, and contributes to world-class research with deep connections across multiple areas of mathematics.

Structure-Preserving Discretizations and Their Applications (2024–2027)

This CRG brings together experts in structure-preserving discretizations to address shared challenges at the intersection of theory and application. Its work spans the development of new discretization methods, their application to scientific and engineering problems, and emerging approaches in structure-preserving machine learning. The group's research supports reliable, efficient computational tools with relevance to industry and applied science.

Forecasting and Mathematical Modeling for Renewable Energy (2023–2026)

Focused on wind and solar energy systems, this CRG develops advanced forecasting methods across meso-, submeso-, and micro-scales. By creating quantitative tools that inform decision-making in power grid integration and electricity markets, the group demonstrates how mathematical innovation can directly support the transition to sustainable energy systems.

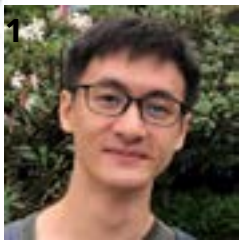
L-Functions in Analytic Number Theory (2022–2025)

This CRG explores fundamental questions in analytic number theory through the study of L-functions, a central object with connections to algebraic number theory, harmonic analysis, probability, and representation theory. Its research includes moments of L-functions, explicit results in analytic number theory, and comparative prime number theory, contributing to advances in a foundational area of mathematics.

POSTDOCTORAL FELLOWS

Each fall, PIMS invites nominations of outstanding early-career researchers in the mathematical sciences for postdoctoral fellowships to be held the following year at PIMS Canadian member universities. Nominated by individual researchers or departments, these fellowships supplement host support, with additional positions allocated through PIMS Collaborative Research Groups, Research Networks, and the PIMS–CNRS partnership, and selected by an assessment panel.

With support from the Simons Foundation, the PIMS–Simons Postdoctoral Award provides a salary supplement to exceptional candidates. All PIMS postdoctoral fellows participate in an orientation and showcase their research through the PIMS Emergent Research Seminar Series.



2025 Postdocs

1. Nicol Leong (ULethbridge)
2. Hermie Monterde* (URegina)

3. John Jairo Lopez Santander (UManitoba)
4. Joshua P Turner (UBC)

5. Peter McDonald* (SFU)
6. Sanzeni Giulio (UAlberta)
7. Seth Taylor (USaskatchewan)
8. Yang Hu (URegina)

Photos not available

9. Dylan Bansard-Tresse** (UVictoria)
10. Wesley J.M. Ridgway (USaskatchewan)
11. Zheng Zhu (UCalgary)

**PIMS-Simons PDF | **PIMS-CNRS PDF*

PIMS COLLABORATIONS

PIMS–CNRS Programs and International Collaborations

2025 was a strong year for PIMS as an International Research Laboratory of the Centre National de la Recherche Scientifique (CNRS). This partnership strengthens knowledge exchange between western Canada and France while deepening long-term research ties across institutions. A flagship component of this collaboration is the CNRS Visitors Program, through which distinguished researchers spend extended periods at PIMS member universities, contributing to collaborative research and academic life.

CNRS Visitors

Distinguished researchers from CNRS and French universities spend extended periods at PIMS member institutions, contributing to collaborative research and academic life. In 2025, PIMS welcomed two CNRS visitors: **Paul Vigneaux**, University of British Columbia and **Olivier Gascuel**, Simon Fraser University.

PIMS–CNRS Postdoctoral Fellowships

This program supports applicants who are French or who completed their PhD in France and has funded over 25 postdoctoral fellows since its inception. In 2025, **Dylan Bansard-Tresse** received a CNRS fellowship, joining three other ongoing fellows.

Collaborations with Other Institutes

In collaboration with international partners, PIMS supports a suite of programs designed to promote cooperation, reduce barriers to collaboration, and maximize the impact of research travel.

PIMS/BIRS Team Up!

In 2025 16 individuals participated in this program which supports in-person collaboration among teams of mathematical scientists, with a focus on researchers from groups traditionally underrepresented in the mathematical sciences.

PIMS Institutes Exchange Program

This program aims to reduce the carbon footprint of research travel while maximizing scientific impact. Researchers traveling between PIMS and partner institutes may extend their visits to include nearby institutions. Partners include ICERM, CIRM, ICTS, IHP, and IMSI.

PIMS–BIRS–Simons Travel Award

In 2025 there were 12 awards initiated to help participants to broaden their travel through research visits at PIMS member institutions.

PIMS-ICMS

In December 2025, PIMS and the International Centre for Mathematical Sciences (ICMS) co-hosted the Big Data Before Data Science Conference at the University of British Columbia.

PIMS Director & Co-Directors, along with visiting CNRS officials and the Consul General of France visit to the TRIUMF Research Institute.

NETWORK-WIDE COLLOQUIUM SERIES

PIMS' network-wide colloquium series offers monthly talks by distinguished speakers during the academic term and continued in 2025 as a core component of PIMS' online programming.

Dynamical symmetry is atypical
Amie Wilkinson, University of Chicago
A Conjecture of Smyth and Solving Non-Deterministic Equations Jordan Ellenberg, University of Wisconsin
The Geometry and Topology Of DNA and RNA
Mariel Vázquez, University of California
The Question Mark Function, Welding & Complex Dynamics
Curtis McMullen, Harvard University
Tree Decompositions: Representing A Graph By A Tree
Maria Chudnovsky, Princeton University

Coming in 2026

January · **Lattices & Cryptography: A Match Made In Heaven**
Vinod Vaikuntanathan, MIT
February · **Mathematical Perspectives on Tumour–Immune Dynamics in a Changing Landscape**
Helen Byrne, University of Oxford
March · **Finite Quotients of 3-Manifold Groups**
Melanie Wood, Harvard University

Digital Collaborations

PIMS First Year Interest Groups (FYIG) connect first- and second-year graduate students through biweekly, PDF-led virtual reading groups focused on accessible topics in the mathematical sciences.

2025-2026 FYIG Topics and Leads:

- **Quantum Walks on Graphs**
  Hermie Monterde University of Regina
- **Explorations in Approximation Theory**
  John Jairo Lopez Santander University of Manitoba
- **An Introduction to Generative Diffusion Models Tianxia Jia** University of Victoria
- **Cohomological Methods in the Geometric Theory of Differential Equations**
  Konstantin Druzhkov University of Saskatchewan
- **Forecasting and Mathematical Modeling for Renewable Energy**
  Trisha Lawrence University of Calgary
- **Primes & the Theory of the Riemann Zeta Function Nicol Leong** University of Lethbridge

PIMS
INDUSTRY HIGHLIGHTS

Math to Power Industry (M2PI) is a professional development program designed to strengthen the Canadian economy by linking highly trained mathematical talent with industry needs.

Developed and launched by PIMS in 2020, **M2PI** creates collaborative opportunities where mathematics can drive innovation and economic impact.

The PIMS **Math to Power Industry (M2PI)** program continued to build strong momentum, highlighted by its summer workshop held in May 2025, which brought together early-career researchers and industry partners from across the PIMS network.

Through collaborative, project-based work, M2PI connects graduate students with industry partners. In 2025, the program brought together 30 trainees across five interdisciplinary teams, each delivering mathematical and computational solutions to industry-driven problems, including projects for:

- Clause Technology
- IOTO International
- Hummingbird Bioscience
- Awesense
- Type One Energy

Through hands-on experience and close collaboration with industry, M2PI continues to demonstrate the value of mathematical expertise in driving innovation, solving complex problems, and building a highly skilled workforce for Canada's future.

The program also launched a **new Case Studies Virtual Seminar Series** featuring talks by students and industry professionals, expanding opportunities for knowledge exchange and career development within the mathematical sciences.

Building on this engagement, in November, M2PI once again partnered with Women in AI Canada to host a career fair in Calgary, further strengthening connections between trainees, employers, and industry leaders.

Thank you to our Project Partners

CLAUSE TECHNOLOGY ioto Hummingbird Bioscience Awesense TYPE ONE ENERGY

EDUCATION OVERVIEW

PIMS sponsors and coordinates a wide range of educational programs for students from Kindergarten through Grade 12. These programs are designed to spark curiosity, build confidence, and deepen appreciation for mathematics, while highlighting its vital role in science, technology, industry, and many other exciting career paths.

We are committed to nurturing the next generation of mathematical scientists and to promoting diversity and inclusion in mathematics from an early age. Since its inception, we have played an active role in supporting and growing educational initiatives that engage students, empower teachers, and strengthen communities.

2025 Math Attack Summer School program.

Participants at the 2025 Math Mania at Macaulay Elementary (University of Victoria).

K–12 Educational Activities

Math Competitions and Enrichment Programs
Delivering competitive and enriching mathematics experiences through ELMACON, alongside engaging Math Circles sessions that challenge students' thinking and make mathematics a fun and thought-provoking activity.

Hands-On and Outreach Events
Organizing interactive, hands-on experiences such as Math Mania, Math Fairs, and school visits that bring mathematics to life and spark curiosity beyond the classroom.

Teacher Support, Professional Development, and Problem-Solving Workshops
Collaborating with educators to deliver professional development (Pro-D) seminars, workshops, and in-school problem-solving sessions that strengthen teaching practices and promote effective and engaging mathematics learning.

These programs are made possible by a vibrant, connected network of educators, researchers, volunteers, and partners who work tirelessly across BC, Alberta, Manitoba, Washington and Saskatchewan. Together, they ensure that students and teachers alike have access to inspiring mathematical experiences throughout Western Canada and Pacific Northwest.

Education & Outreach
2025 Highlights

Throughout 2025, PIMS remained dedicated to strengthening mathematics education across Canada through a broad range of K–12 outreach, enrichment, and professional learning activities.

- PIMS-supported programming emphasized hands-on engagement, accessibility, and playful exploration of mathematics reaching students, teachers, and families nationwide.
- Students engaged with mathematics through Math Circles, Math Mania events in schools and communities, and public-facing outreach such as Math Mania at Science Rendezvous.
- Competitive and enrichment opportunities continued through regional and provincial mathematics contests and camps, including the SFU Summer Math Camp, the UCalgary Junior High Data Science Camp, and the UBC Girls in Data Science Camp.

Students learning new approaches to solving math problems.

- Targeted summer programming also included the UCalgary 2025 Math Attack Summer Camp for Girls, supporting sustained participation of girls in mathematics.
- Teacher-focused initiatives played a key role in 2025, with professional learning opportunities such as the Summer School for Elementary School Teachers and additional mathematics education workshops designed to support pedagogy, confidence, and community-building among educators.
- PIMS flagship education programs hosted in 2025 included Science Rendezvous, and ELMACON, each providing accessible entry points into mathematical thinking for diverse audiences.

Students at the 2025 Data Science Camp.

- The annual Changing the Culture Conference, hosted by PIMS, brought together mathematicians, educators, and teachers to bridge gaps between those deeply engaged with mathematics and those less connected to the subject. The event featured talks, workshops, and a panel discussion focused on inclusive mathematics education. At the conference, **Darja Barr** (University of Manitoba) was awarded the 2025 PIMS Education Prize in recognition of her contributions to mathematics education.

Looking Ahead to 2026

"Our focus in 2026 remains clear: to foster discovery, support the next generation of mathematical leaders, & create meaningful opportunities for connection through our programs & events."

Özgür Yilmaz
PIMS Director

For a complete list of events visit:
PIMS.math.ca

PIMS is excited to advance a dynamic slate of initiatives that strengthen research excellence, support training at all career stages, foster inclusive community-building, and deepen international collaboration across the mathematical sciences in 2026.

Women in Mathematics of Data Science
Programming aimed at strengthening participation, visibility, and leadership of women and underrepresented groups by forming research collaborations in data science and related mathematical fields.

3MC Summer School
An advanced training program supporting early-career researchers through intensive instruction and community-building in mathematical and computational sciences.

Mathematics of Human–Environmental Systems & Climate Change Impacts Summer School
A summer school exploring mathematical approaches to coupled human–environment systems and the impacts of climate change, led through the Maud Menten Institute.

Education – Teachers' Mathematics Camp
A professional development program designed to support K–12 teachers through mathematical content enrichment, pedagogy, and peer learning.

Women in Mathematics of Data Science – Junior Researcher Math Camp
A focused math camp supporting underrepresented researchers through advanced training, mentorship, and community-building in data science–related mathematics.

Queer in Computational & Applied Mathematics
A community-building event supporting equity, visibility, and inclusion through mentoring and research opportunities.

SAGE Days Western Canada 2026 (Calgary)
To be held in Calgary, supporting open-source mathematical software development and community engagement.

Canada–France–Chile Ocean Research
A joint international workshop bringing together mathematical scientists, oceanographers, and marine ecologists to strengthen international research collaborations.

2026 EVENT HIGHLIGHTS

SEMINARS, CONFERENCES & WORKSHOPS

1 January - Ongoing — **Distinguished Colloquium**
University of British Columbia, University of Regina, University of Saskatchewan and University of Washington

1 January - Ongoing — **PIMS-CORDS SFU Operations Research Seminar Series**
Simon Fraser University

1 January - Ongoing — **Discrete Math Seminar Series**
University of Victoria

1 January - Ongoing — **Algebra & Number Theory Seminar Series**
University of Calgary

1 January - Ongoing — **Mathematical Biology Seminar Series**
University of Alberta

1 January - Ongoing — **05C50 Seminar Series**
University of Manitoba

1 January - Ongoing — **Analysis, Geometry and Dynamics Seminar Series**
University of Washington

1 January - Ongoing — **Emergent Research: The PIMS PDF Seminar Series**
Network Wide - Online

22 January — **PIMS Network Wide Colloquium: Vinod Vaikuntanathan**
Network Wide - Online

10 - 15 February — **Canada-France-Chile Ocean Research Connections Workshop**
University of British Columbia - Vancouver & Bamfield Marine Sciences Centre

12 February — **PIMS Network Wide Colloquium: Helen Byrne**
Network Wide - Online

26 March — **PIMS Network Wide Colloquium: Melanie Wood**
Network Wide - Online

7 - 8 May — **Alberta Mathematics Dialogue 2026**
MacEwan University

25 - 29 May — **2nd Mathematical Foundations of Quantum Advantage**
Simon Fraser University

30 - 31 May — **Western Canada Linear Algebra Meeting**
Capilano University Lonsdale

8 - 12 June — **Sage Days Western Canada 2026: Rocky Mountains** Barrier Lake Station

22 - 26 June — **PIMS-NCTS Workshop in Geometric Analysis**
University of British Columbia - Vancouver

13 - 17 July — **The 38th International Conference on Formal Power Series and Algebraic Combinatorics**
University of Washington

4 - 14 August — **Women in Mathematics of Data Science**
University of British Columbia - Vancouver

1 - 2 May — **Queer in Computational and Applied Mathematics**
University of British Columbia- Okanagan

SUMMER SCHOOLS

22 - 26 June — **Summer School on Homotopy Colimits**
University of Regina

6 - 14 August — **Maud Menten Institute Summer School: Mathematics of Human-Environmental Systems and Climate Change Impacts**
University of Victoria

COLLABORATIVE RESEARCH GROUPS

2023 – 2026 — **Forecasting and Mathematical Modeling for Renewable Energy**

2024 - 2027 — **Structure-Preserving Discretizations and their Applications**

2025 - 2028 — **Diagram Categories in Homotopy Theory**

PIMS RESEARCH NETWORKS

2023 - 2026 — **Kantorovich Initiative**

2024 – 2027 — **The Maud Menten Institute**

INDUSTRY EVENTS

1 January - Ongoing — **M2PI Case Studies Virtual Seminar Series**
Network Wide - Online

25 May - 12 June — **Math to Power Industry (M2PI) Workshop**
Online

K-12 EDUCATION EVENTS

2 May — **Elementary Math Contest (ELMACON)**
University of British Columbia - Vancouver

9 May — **Science Rendezvous**
PIMS Sites Canada-wide

15 May — **Changing the Culture**
Simon Fraser University

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