Pacific Institute for the Mathematical Sciences

PIMS MONTHLY CONNECTION | **October 2020**

Hello from PIMS

While the fall term may look different, we are inspired by the resiliency amongst researchers who continue to collaborate and move the mathematical sciences forward in a new way.

Athabasca University has now joined PIMS as an Affiliated Institute. We are excited to welcome them to the PIMS network and expand again.

We are pleased to share a new seminar series, Emergent Research: The PIMS Postdoctoral Fellow Seminar. Every three weeks, you will have the opportunity to connect with emerging research in the mathematical sciences from a PIMS Postdoctoral Fellow. Missed the inaugural lecture? Head over to MathTube to catch up!

Nominations are now open for PIMS Postdoctoral Fellowships and the CRM-Fields-PIMS Prize. Check out News & Announcements below to learn more.

The PIMS community continues to engage, support and collaborate in a virtual setting while finding new ways to connect.

Sincerely,
The PIMS Team

FEATURE EVENTS

The Unsolved Problems Conference: Celebrating the living legacy of the mathematics of Richard Guy

October 2: Hosted virtually by the University of Calgary

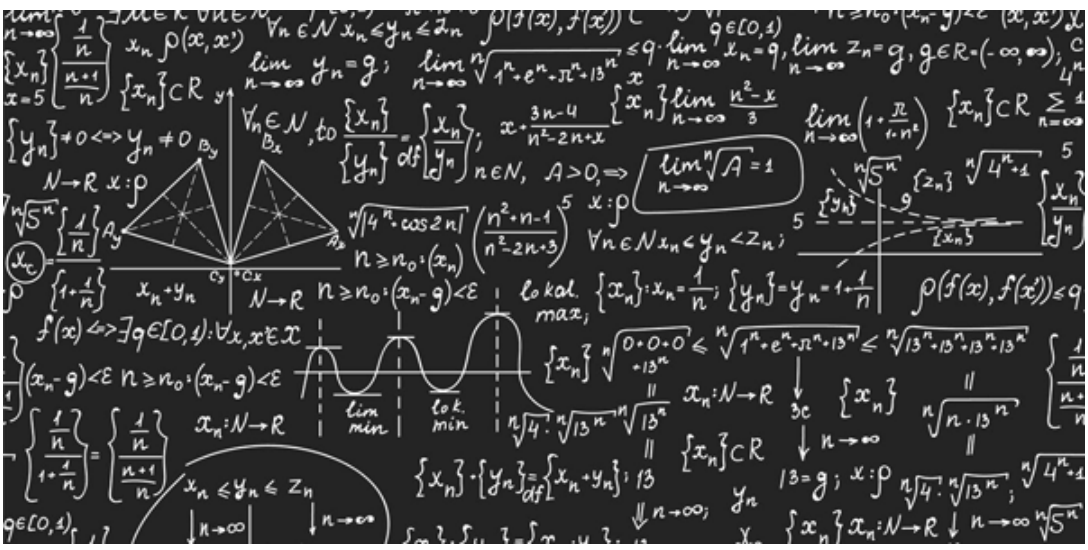
Join us for a one-day conference in honour of Richard Guy and his contribution to mathematical research. There will be two parallel sessions, geared towards combinatorics and number theory, respectively. Each session will feature three talks throughout the day.

Emergent Research: The PIMS Postdoctoral Fellow Seminar

October 14: Hosted Virtually by PIMS

Shuxing Li: Packings of Partial Difference Sets

As the underlying configuration behind many elegant finite structures, partial difference sets have been intensively studied in design theory, finite geometry, coding theory, and graph theory. Over the past three decades, there have been numerous constructions of partial difference sets in abelian groups with high exponent, accompanied by numerous very different and delicate techniques. Surprisingly, we manage to unify and extend a great many previous constructions in a common framework, using only elementary methods. The key insight is that, instead of focusing on one single partial difference set, we consider a packing of partial difference sets, namely, a collection of disjoint partial difference sets in a finite abelian group. Although the packing of partial difference sets has been implicitly studied in various contexts, we recognize that a particular subgroup reveals crucial structural information about the packing. Identifying this subgroup allows us to formulate a recursive lifting construction of packings in abelian groups of increasing exponent.



2020 PIMS-UBC Math Job Forum for Postdoctoral Fellows and Graduate Students

October 26: Hosted Virtually by PIMS & UBC

The PIMS-Math Job Forum is an annual Forum to help graduate students and postdoctoral fellows in the Mathematics Department with their job searches. The session is divided in two parts: short presentations from our panel followed by a discussion.

Learn the secrets of writing an effective research statement, developing an outstanding CV, and giving a winning job talk. We will address questions like: Who do I ask for recommendation letters? What kind of jobs should I apply to? What can I do to maximize my chances of success?

2020 CRM-Fields-PIMS Prize Lectures: Catherine Sulem

November 24 - 25, hosted virtually by the Fields Institute

Professor Sulem is being recognized for her numerous and influential contributions to the study of non-linear partial differential equations. Her deep results on the non-linear Schrödinger equation resolved multiple questions that had resisted analysis for years. In particular, her work is central to the understanding of self-focusing singularities to this equation. Her analysis of water waves introduced powerful new probabilistic ideas to that field. These and other ground-breaking achievements have been acknowledged earlier through her election as a Fellow of both the Royal Society of Canada and the American Mathematical Society, through winning the Krieger-Nelson prize of the Canadian Mathematical Society and the 2019 Association for Women in Mathematics - Society for Industrial and Applied Mathematics (AWM-SIAM) Sonia Kovalevsky Lecture, and through the award of a Killam Research Fellowship of the Canada Council for the Arts.

PRIMA Congress 2021

Save the Date! December 5 - 10 2021: Hosted in Vancouver and Virtually by PIMS

The Pacific Rim Mathematical Association Congress 2021 will take place in Vancouver, Canada and virtually. Mathematicians from around the Pacific Rim will converge to discuss the latest developments in Mathematics. Stay tuned for more details!

For more lectures and PIMS resources, please visit mathtube.org

---

Click below for all events | October 2020

Scientific

NEWS & ANNOUNCEMENTS

Athabasca University Joins PIMS!

We are pleased to announce that the PIMS network is growing again!

Athabasca University is now a PIMS Affiliated Institute. We are excited to have Athabasca University on board and welcome them to the PIMS network.

PIMS Postdoctoral Fellowships

Outstanding young researchers are invited to apply through MathJobs. Applicants must be nominated by a scientist or department affiliated with PIMS. The deadline to apply is December 1, 2020. Please see the MathJobs posting for more details.

Call for Speaker Nominations: PIMS Network-wide Colloquium

PIMS is sponsoring a network-wide colloquium to take place Winter/Spring 2021. High quality colloquia by distinguished speakers will be given on a monthly basis (delivered virtually) for an audience spread across the 10 PIMS member universities. We are now accepting nominations for colloquium speakers. Learn more

Call for Nominations: CRM-Fields-PIMS Prize

The Centre de recherches mathématiques (CRM), the Fields Institute, and the Pacific Institute for the Mathematical Sciences (PIMS) invite nominations for the joint CRM-Fields-PIMS prize, awarded in recognition of exceptional research achievement in the mathematical sciences. The candidate's research should have been conducted primarily in Canada or in affiliation with a Canadian university. Nominations are due November 1, 2020. Learn more.

Director Search

As PIMS' current director James Colliander has chosen not to seek a renewal of his term, we are now inviting applications for the position of director. The position is for a term of up to five years, to commence on July 1, 2021. More details can be found here.

PIMS COMMUNITY RECENT PUBLICATIONS

1. Cunningham, C., Fiori, A., & Zhang, Q. (2020). Arthur packets for G2 and perverse sheaves on cubics. *arXiv preprint arXiv:2005.02438*.
2. Kim, J. (2020). Almost-orthogonality principles for certain directional maximal functions. *arXiv preprint arXiv:2004.00141*.
3. Han, D., Ray, J., & Wei, F. (2020). Normal elements in the Iwasawa algebras of Chevalley groups. *manuscripta mathematica,*1-37.

ABOUT PIMS

The Pacific Institute for the Mathematical Sciences (PIMS) was created in 1996 to promote **discovery**, **understanding** and **awareness** in the mathematical sciences. PIMS has expanded from the mathematics community of **Alberta** and **British Columbia** to include **Washington State**, **Saskatchewan** and **Manitoba**. We are proponents of mathematical **collaboration with industry**, **innovation in mathematics education** from K-12 to graduate level initiatives, **public outreach** and **partnerships** with similar organizations around the globe. We fund Collaborative Research Groups, Post-Doctoral Fellowships, individual events, and competitive prizes in mathematics.

FOLLOW US!

Mailing address:
Pacific Institute for the Mathematical Sciences
The University of British Columbia
4176-2207 Main Mall
Vancouver, BC V6T 1Z4
Canada