



# Pacific Institute *for the* Mathematical Sciences

PIMS MONTHLY CONNECTION | April 2019



## Hello from PIMS

We hope you're enjoying the start of spring and an upturn in the weather.

April promises to be a busy month with the Annual PIMS Board Meeting being held at the University of British Columbia Okanagan, as well as several high-profile lectures and events across the PIMS sites.

### IMPORTANT NOTICES:

1. **Hugh C. Morris Lecture at U Saskatchewan: Noriko Yui, April 25 at 3:30 pm.** [Click here for details.](#)
2. **Pacific Northwest Geometry Seminar at U Washington. April 27-28.** [Click here for details.](#)
3. **PIMS-CANSSI Distinguished Lecture: Heping Zhang: April 29 at 3 pm.** [Click here for details.](#)

Below you'll find some highlights from March and more details about our upcoming events. Hope to see you there!

Sincerely,  
The PIMS Team

## FEATURE EVENTS



### [Flows on the Saskatchewan: Workshop on Integrability and Inverse Problems](#)

**April 5-7 at The University of Saskatchewan**

In celebration of the 65th birthday of Jacek Szmigielski, Professor of Mathematics at the University of Saskatchewan.



### [Hugh C. Morris Lecture at U Saskatchewan: Noriko Yui](#)

**Thursday, April 25 @ 3:30 pm**

Modularity of Calabi-Yau Varieties

[Subscribe](#)

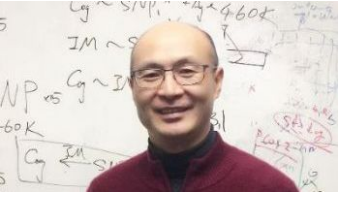
[Past Issues](#)

[Pacific Northwest Geometry Seminar \(PNSG\)](#)  
April 27-28, The University of Washington in



### Seattle

The Pacific Northwest Geometry Seminar (PNSG) is a regional meeting for geometers of all kinds that's held once each academic year.



### [PIMS-CANSSI Distinguished Lecture: Heping Zhang](#)

**Friday, April 29 at the University of Alberta at 3 pm**

Residuals and Diagnostics for Generalized Linear Models.

## Click below for all events | April 2019

Scientific

Educational

Industrial

## NEWS & ANNOUNCEMENTS



### [The University of Calgary Held a 2019 Sonia Kovalevski Day](#)

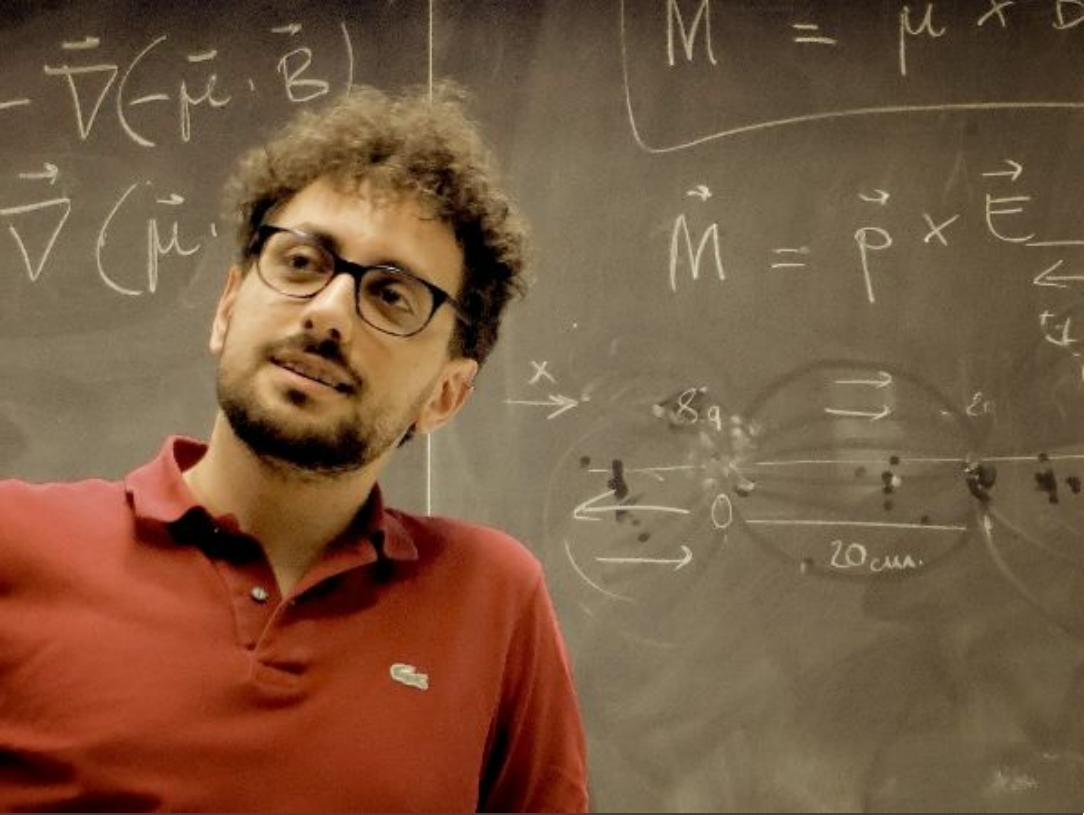
**March 2, 2019, at the University of Calgary**

Sonia Kovalevsky Days have consisted of a program of workshops, problem-solving competitions for female high school and middle school students. The University of Calgary 2019 Sonia Kovalevsky Day focused on answering the question where is math in the world, interdisciplinary mathematics, and communicating math. The event consisted of brainstorming sessions, lectures, and a mini-research fair.

It's clear to see that the event was a great success!







### [The Future of Computational Mathematics](#)

An interview with PIMS postdoc at SFU, Simone Brugiapaglia

#### Is the Randomized Preconditioner Going to Work?

Input:  $m \times n$  matrix with  $\text{rank}(A) = n$ ,  $m \times 1$  vector  $b$   
Sampling amount  $c \geq n$

- Sample:  $c \times n$  matrix  $SA$
- Preconditioner: QR factorization  $SA = Q_S R_S$
- Solve with LSQR:  $\min_y \|A R_S^{-1} y - b\|_2$
- Solve  $\Delta$  system:  $R_S x = y$

#### Questions

- Does sampled matrix have full column-rank? If  $\text{rank}(SA) < n$  then  $R_S$  singular, **break down**
- What is **condition number** of preconditioned matrix? If  $\kappa(A R_S^{-1}) \gg 1$  then **slow convergence**



0:00 / 49:13



### [Ilse C.F. Ipsen, North Carolina State University, at UManitoba](#)

A PIMS-U Manitoba Distinguished Lecture on *An Introduction to Randomized Algorithms for Matrix Computations*

<http://www.mathtube.org/lecture/video/introduction-randomized-algorithms-matrix-computations>

For more lectures and PIMS resources, please visit [mathtube.org](http://mathtube.org)

## IMPORTANT SECURITY INFORMATION

PIMS will not contact you regarding travel reservations or payments. Please be vigilant should you receive any emails, calls or text messages claiming to assist you in making reservations for a PIMS event. Do not provide any personal information such as a social insurance number, credit card number, bank account number, or passport number, as these requests are fraudulent in nature.

## PIMS COMMUNITY RECENT PUBLICATIONS

1. Talpo M., Scherotzke S., and Sibilla N., "[On a logarithmic version of the derived McKay correspondence](#)" To appear in *Compos. Math.*, 55 pages, 2018. arXiv:1612.08961
2. Rolfsen D., "[Ordered groups, knots, braids and hyperbolic 3-manifolds.](#)" to appear in *Winterbraids Lecture Notes*, CEDRAM, 32 pages.
3. Bauer K., Johnson B., Osborne C., Riehl E., Tebbe A., "[Directional derivatives and higher order chain rules for abelian functor calculus.](#)" *Topology and its Applications* 235 (2018) 375-427.
4. Basterra M., Bauer K., Johnson B., Hess K., "[Women in Topology II: Further collaborations in homotopy theory.](#)" *Topology and its applications* 235 (2018) A1-A2.

**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.

*Header Image courtesy of the University of Regina*

## FOLLOW US!



**Mailing address:**

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

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