

Emergent Research:

The PIMS Postdoctoral Fellow Seminar



Pacific Institute *for the*
Mathematical Sciences

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The Geometric

Structure of Possible

Singularities for the

Navier-Stokes and

Euler Equations



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SPEAKER BIO:

Evan Miller received his PhD in mathematics from the University of Toronto under the supervision of Prof. Robert McCann in 2019. He was then a postdoc at McMaster University, working with Prof. Eric Sawyer. He was also a visiting postdoc at the Fields Institute in Toronto and the Mathematical Sciences Research Institute in Berkeley for thematic programs in mathematical fluid mechanics. At MSRI, he worked with Prof. Jean-Yves Chemin. Evan is now a PIMS postdoctoral fellow at the University of British Columbia working with Prof. Tai-Peng Tsai and Prof. Stephen Gustafson.

ABSTRACT:

I will discuss several geometric constraints of the finite-time blowup of smooth solutions of the Navier-Stokes equation in the regularity criteria related to the eigenvalue structure of the strain matrix and to the vorticity direction. These regularity criteria suggest that strain self-amplification via axial compression/planar stretching drives any possible blowup. I will also discuss model equations where this form of blowup does indeed occur.

For more information and registration:

<https://www.pims.math.ca/seminars/PIMSPDF>

ABOUT PIMS PDF SEMINARS:

PIMS ongoing lecture series featuring our Postdoctoral Fellows every three weeks. You will have the opportunity to connect with emerging research in the mathematical sciences from a PIMS Postdoctoral Fellow. PIMS PDFs are amongst the top young researchers in Canada, and this is an excellent opportunity to learn about them, and their work.