Emergent Research:
The PIMS Postdoctoral Fellow Seminar

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Pacific Institute *for the* **Mathematical Sciences**

Large Systems of Interacting Particles and their Application in Optimization

ABSTRACT:

Large systems of interacting particles (or agents) are widely used to investigate self-organization and collective behavior. They frequently appear in modeling phenomena such as biological swarms, crowd dynamics, self-assembly of nanoparticles and opinion formation. Similar particle models are also used in metaheuristics, which provide empirically robust solutions to tackle hard optimization problems with fast algorithms. In this talk I will start with introducing some generic particle models and their underlying mean-field equations. Then we will focus on a specific particle model that belongs to the class of Consensus-Based Optimization (CBO) methods, and we show that it is able to perform essentially as good as ad hoc state of the art methods in challenging problems in signal processing and machine learning.

For more information and registration:
https://www.pims.math.ca/seminars/PIMSPDF

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SPEAKER BIO:
Hui Huang, Ph.D., is currently a PIMS Postdoc at the University of Calgary under the supervision of Prof. Jinniao Qiu. Before moving to Calgary, he worked as a postdoctoral researcher in the Chair for Applied Numerical Analysis at the Technical University of Munich, Germany. Prior to being at TUM he was an Alan Mekler Postdoctoral Fellow in the Department of Mathematics at Simon Fraser University. In 2017, he received his PhD in Mathematics from Tsinghua University. His doctoral dissertation was conducted in consultations with Prof. Jian¬-Guo Liu from Duke University, where he studied as a joint PhD student from 2014 to 2016. His research has been focused on complex dynamical systems and their related kinetic equations.

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.