Topical Workshop

AUGUST 5-9, 2019

Applied Mathematical Modeling with Topological Techniques

Organizing Committee:
Henry Adams, Colorado State University
Maria D’Orsogna, California State University, Northridge
Rachel Neville, University of Arizona
Jose Perea, Michigan State University
Chad Topaz, Williams College

Mathematical modelers face a variety of challenges, including summarizing large data sets to understand and explore a system of interest, inferring the model parameters most accurate for describing a given data set, and assessing the goodness-of-fit between data sets. Computational topology provides a lens through which these challenges may be addressed. At the same time, just as topological techniques provide opportunities for modelers, the challenges that modelers face give rise to opportunities for applied topologists. For instance, topologists may develop techniques that make model predictions based on the topology of experimental or simulation data, that analyze time-varying data, or that turn model outputs into formats suitable for machine learning.

This workshop brings together the applied mathematical modeling and applied topology communities, aiming to give modelers exposure to topological techniques still not commonly used in their community, and to give topologists exposure to modeling challenges that might stimulate the development of new techniques.

Confirmed Speakers and Research Group Facilitators:
Veronica Ciocanel, Ohio State University
Padraig Corcoran, Cardiff University
Sarah Day, College of William and Mary
Brittany Fasy, Montana State University
Kara Maki, RIT College of Sciences
Melissa McGuirl, UT Austin/Brown University
Francis Motta, Florida Atlantic University
Michael Robinson, American University
Nancy Rodriguez, University of North Carolina, Chapel Hill
Martin Short, Georgia Tech
Michael Sinhuber, Stanford University
Kathleen Storey, University of Michigan
Mikael Vejdemo Johansson, CUNY
College of Staten Island
Lori Ziegelmeier, Macalester College

Participation
Most ICERM workshops are aimed at scientists who have, or are pursuing, a doctoral degree and are actively involved in the topic of the workshop. For full consideration, the deadline for application is March 18, 2019. To request an invitation to an ICERM workshop, please complete an online application. Support for local expenses may be provided. ICERM encourages women and members of underrepresented minorities to apply. More information and an application form are available on our website.

About ICERM
The Institute for Computational and Experimental Research in Mathematics (ICERM) is a National Science Foundation Mathematics Institute at Brown University in Providence, RI. Its mission is to broaden the relationship between mathematics and computation: specifically, to expand the use of computational and experimental methods in mathematics, support theoretical advances related to computation, and address problems posed by the existence and use of the computer through mathematical tools, research and innovation.

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