THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS

Colloquium Series

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Thursday, April 11, 2019
3:30pm in room 102, Caldwell Building

Weak Convergence Results for Topological Crackle

The main objective of this work is to study the topological crackle from the viewpoints of Topological Data Analysis. Topological crackle frequently appears in the context of manifold learning, and refers to the layered structure of homological cycles generated by ``noisy'' samples, where the support is unbounded. We aim to establish weak convergence results for topological objects, including Betti numbers -- a basic quantifier of cycles, and persistence diagrams -- a point process representation for persistent homology, where each homological cycle is represented by its (birth, death) coordinates. If time allows, I will also discuss the case in which the sample possesses non-trivial dependency structure.

*Short Bio: Takashi Owada is an assistant professor of Department of Statistics in Purdue University. Prior to joining Purdue, he was a postdoc researcher at Technion-Israel Institute of Technology, and received his PhD in Operations Research at Cornell University. His research interests lie in random topology, topological data analysis, random graph theory, heavy tail probability, extreme value theory, and long range dependence.