

**Indiana University-Purdue University  
Indianapolis**  
**Department of Mathematical Sciences**

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, January 23, 2024  
Zoom Meeting: Meeting ID: 845 0989 4694

**Speaker:** **Qi Feng**

*Department of Mathematics, Florida State University*

**Title:** **Entropy dissipation for general Langevin dynamics and its application**

**Abstract:**

In this talk, I will discuss long-time dynamical behaviors of Langevin dynamics, including Langevin dynamics on Lie groups and mean-field underdamped Langevin dynamics. We provide unified Hessian matrix conditions for different drift and diffusion coefficients. This matrix condition is derived from the dissipation of a selected Lyapunov functional, namely the auxiliary Fisher information functional. We verify the proposed matrix conditions in various examples. I will also talk about the application in distribution sampling and optimization. This talk is based on several joint works with Erhan Bayraktar and Wuchen Li.

**Bio:**

Qi Feng is an Assistant Professor at Florida State University, specializing in stochastic analysis, mathematical finance, machine learning, and rough path theory. He earned his Ph.D. from the University of Connecticut in 2018 and a Master's in Computational Finance from Purdue University in 2017. Previously, he worked at the University of Michigan and the University of Southern California. His recent research contributions have appeared in SIAM Journal on Financial Mathematics, Transactions of AMS, ICML, ICLR, etc.