

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

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, March 28, 2023
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Xia Wang**
*Department of Statistics,
Indiana University*

Title: **A link between Gaussian random fields and Markov random fields on the circle**

Abstract:

The link between Gaussian random fields and Markov random fields is well established based on a stochastic partial differential equation in Euclidean spaces, where the Matern covariance functions play an essential role. However, the Matern covariance functions are not always positive definite on circles and spheres. In this talk, we focus on the extension of this link to circles, and show that the link between Gaussian random fields and Markov random fields on circles is valid based on the circular Matern covariance functions, instead. Additionally, we formally define the white noise space and its associated Brownian bridge on the circle for the stochastic differential equation used in this research, and show that the Brownian motion on the circle constructed by Levy is a regular Euclidean Brownian motion on the half-circle with its own mirror image on the other half-circle, and is degenerated in the sense of Minlos (1959).

Bio:

Dr. Chunfeng Huang received his Ph.D. in Statistics at Texas A&M University in 2001, and is currently an associate professor at Indiana University, Bloomington. His research interest is spatial statistics, spline smoothing and neural networks.