Indiana University Indianapolis
Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, April 08, 2025
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Shizhe Chen**
Department of Statistics, UC Davis

Title: **Instrumental variable analysis with multivariate point process treatments**

Abstract:

Multivariate point processes are popular tools for inferring relationships among subjects from recurrent event data such as neural spike trains. Complicated by the unmeasured confounding variables, interventions to the system are often employed in order to infer causality. However, these interventions are of low precision that they might influence the intensities of multiple processes simultaneously. In this study, we propose an instrumental variable framework with treatments being multivariate point processes. We show that the causal effects can be learned using generalized Wald estimation. We propose a penalized estimation procedure motivated by classic methods for density deconvolution. The proposed method is applied to neural data from behavioral experiments on mice.

Bio:
Dr. Shizhe Chen is an assistant professor in the Department of Statistics at UC Davis. He obtained his Ph.D. degree in biostatistics at University of Washington, Seattle. Prior to joining Davis, he was a postdoctoral research scientist in the Grossman Center for the Statistics of Mind at Columbia University. He is broadly interested in emerging statistical problems in learning large complex biological systems from massive data.