

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

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, March 26, 2019
LD 265

Speaker: Ruiqi Liu
Department of Mathematical Sciences, IUPUI

Title: **Linearity Detection in Partially Linear Panel Model
with Fixed Effects**

Abstract:

A new statistical procedure, based on a modified spline basis, is proposed to identify the linear components in panel model with fixed effects. Under some mild assumptions, the proposed procedure is shown to consistently estimate the underlying regression function and to effectively select the linear components. When compared to existing methods for detection of linearity in panel model, our approach is demonstrated to be theoretically justified as well as practically convenient. We provide a computational algorithm which implements the proposed procedure along with a path-based solution method for linearity detection, which avoids the burden of selecting the tuning parameter for the penalty term. Monte Carlo simulations are conducted to examine the finite sample performance of our proposed procedure with detailed findings that confirm our theoretical results in the paper. Application to Aggregate Production Data also illustrates the necessity for detecting linearity in partially linear panel model.