

Indiana University-Purdue University Indianapolis

Department of Mathematical Sciences

STATISTICS SEMINAR

11:30am—12:30am, Friday, September 24, 2021

Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: Soutir Bandyopadhyay

Department of Applied Mathematics and Statistics, Colorado School of Mines

Title: Whittle likelihood for irregularly spaced spatial data

Abstract:

Under some regularity conditions, including that the process is Gaussian, the sampling region is rectangular, and that the parameter space Θ is compact, it has been shown that the Whittle estimator $\hat{\theta}_n$ minimizing their version of Whittle likelihood is consistent (for $d \leq 3$). One can construct large sample confidence regions for covariance parameters θ using the asymptotic normality of the Whittle estimator $\hat{\theta}_n$. However, this requires to estimate the asymptotic covariance matrix, which involves integrals of the spatial sampling density. Moreover, nonparametric estimation of the quantities in the asymptotic covariance matrix requires specification of a smoothing parameter and is subject to the curse of dimensionality. In comparison, we propose a spatial frequency domain empirical likelihood-based approach which can be employed to produce asymptotically valid confidence regions and tests on θ , without requiring explicit estimation of such quantities.

Bio:

Dr. Soutir Bandyopadhyay is an associate professor in the department of applied mathematics and statistics at Colorado School of Mines. He received his Ph.D. in Statistics from Texas A& M University in 2010. Dr. Bandyopadhyay has published lot of papers on top journals including Annals of Statistics and Journal of the Royal Statistical Society, Series B. Dr. Bandyopadhyay also has received many grants and awards. His research interests focus on Spatial and Environmental Statistics, Time Series, Bioinformatics, Bootstrap/Resampling Methods and Large Sample Theory.