



# INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

## SEMINAR

**Date: November 25, 2024**

**Time: 11:45 AM**

### VENUE:

**L- Infinity**

(5<sup>th</sup> Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

### TITLE:

**Cross Sectional Regression with Cluster Dependence**

### SPEAKER:

**Subhodeep Dey**

Stat-Math Unit, ISI Kolkata

### ABSTRACT:

*The interdependence of model error in linear regression may lead to inconsistency of LSE and thus no CLT is tenable, in general. However, if the data is in group/cluster forms, inference may be possible based on robust standard errors. We have considered cross-sectional dependence within clusters and independence between clusters, when cluster size is both finite and infinite. In this talk, we will describe three problems under the above setup.*

*Firstly, we propose a new estimator which is consistent and asymptotically normal under such cross-sectional dependence. It also works well, when cluster sizes are extremely large. An appropriate standard error is provided. Detailed simulation study examines the efficacy of the proposed estimator.*

*Secondly, we propose another estimator which is consistent and asymptotically normal under such cross sectional dependence and for infinite cluster sizes. Here, we can also allow the regression parameter to vary across the clusters. Then, we want to propose an appropriate standard error for testing purposes.*

*Thirdly, we propose an estimator for the least absolute deviation regression parameter for cross-sectional data with cluster dependence, which is shown to be consistent and asymptotically normal. Then we want to propose a consistent estimate for the covariance matrix of the asymptotic distribution and propose a test procedure based on our proposed estimator.*

*These are based on joint work with Prof. Gopal Krishna Basak and Prof. Samarjit Das.*

**ALL ARE CORDIALLY INVITED**