



## Theoretical Statistics and Mathematics Unit

Indian Statistical Institute

203 B.T. Road, Kolkata-700108

### SEMINAR

**Date:** June 15, 2026

**Time:** 4:15 PM

**VENUE:**

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

**SPEAKER:**

**Md. Amir Hossain**

ISI Delhi

**TITLE:**

**A groupoid perspective of reduced  $C^*$ -algebras of product systems**

**ABSTRACT:**

*Let  $P$  be an Ore semigroup with an order unit. In this talk, we prove that there is a bijection between  $E_0$ -semigroups over  $P$  and product systems of  $C^*$ -correspondences over the opposite semigroup of  $P$ . Using this bijection, we show that the reduced  $C^*$ -algebra of a proper product system is Morita equivalent to the reduced crossed product of the associated semigroup dynamical system. Under suitable assumptions, the latter algebra admits a groupoid crossed product description. Using this groupoid picture, we discuss the nuclearity and exactness of the reduced  $C^*$ -algebra of the product system. We also discuss the invariance of  $K$ -theory under homotopies of product systems. This is joint work with S. Sundar.*

**ALL ARE CORDIALLY INVITED**