



Theoretical Statistics and Mathematics Unit

Indian Statistical Institute

203 B.T. Road, Kolkata - 700108

SEMINAR

Date: July 29, 2026

Time: 11:30 AM

VENUE:

L-Infinity, 5th Floor, A.N. Kolmogorov Bhavan, ISI Kolkata

SPEAKER:

Utsabraaj Sarkar

Stat-Math Unit, ISI Kolkata

TITLE:

The 2-Category of Martingales and Unitary Connections

ABSTRACT:

Since the work of Longo and Roberts from 1980s on C^ -tensor category, it gained considerable interest; in particular, it can be utilized to study the standard invariants of unital II_1 subfactor inclusions. Izumi extensively worked on this standard invariant in the perspective of the Poisson boundary of an associated AFD and a UCP operator. In a recent article by Das, Ghosh, Ghosh and Jones, the authors generalized the idea of standard invariant and introduce a W^* -2-category which turned out to be a sub-2-category of AFDs, bimodules and intertwiners. On the other hand, Neshveyev and Yamashita started with an arbitrary rigid semisimple C^* -tensor category with countably many irreducibles and defined its Poisson boundary with respect to a discrete probability measure on the irreducibles.*

Although all of the above works seem to hover around a common theme, but a direct connection seems to be missing. We address this by introducing a general platform which unifies all of the ideas. Starting with an arbitrary rigid W^ -2-category (possibly non-semisimple), we construct its Poisson boundary which can also be viewed as a categorification of martingales. In this seminar, we will discuss about this new construction; this is a joint work with Mainak Ghosh, Shamindra Ghosh and Michael Montgomery.*

ALL ARE CORDIALLY INVITED

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