



Theoretical Statistics and Mathematics Unit, Kolkata
INDIAN STATISTICAL INSTITUTE

SEMINAR

Date: March 10, 2025

Time: 02:30 PM

VENUE:

L - Infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Jones-Temperley-Lieb Algebras from the viewpoint of noncommutative probability

SPEAKER:

Claus Koestler

UCC - National University of Ireland

ABSTRACT:

Thoma's theorem provides a characterization of the extremal characters of the infinite symmetric group. Using distributional invariance principles in noncommutative probability, this famous theorem was shown by Gohm and Köstler to form part of a quantum de Finetti theorem. A key element of the underlying operator algebraic approach was the consideration of the infinite symmetric group presented via star generators. Furthermore, Nica and Köstler identified that the central limit laws of this sequence of star generators, with respect to certain extremal characters, correspond to the empirical law of traceless GUE random $d \times d$ matrices.

My talk will briefly review these results and address ongoing research into transferring them to extremal tracial states on the Jones-Temperley-Lieb algebras. A successful transfer would highlight the robustness of the Jones index as a consequence of a noncommutative de Finetti theorem.

References:

[1] Rolf Gohm, Claus Köstler. Noncommutative Independence from Characters of the Infinite Symmetric Group S_{∞} . arXiv:1005.5726

[2] Claus Köstler, Alexandru Nica (2021). A central limit theorem for star-generators of S_{∞} , which relates to the law of a GUE matrix'. *Journal Of Theoretical Probability*, 34 (3):1248-1278

[3] Claus Köstler, Jacob Campbell, Alexandru Nica (2021). A central limit theorem for star-generators of S_{∞} , which relates to traceless CCR-GUE matrices. *International Journal Of Mathematics*, 33, Paper No. 2250065.

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