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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Exact fractional quantization

by

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Abstract

The magnetic Laplacian on the plane has lowest eigenspace being the well-studied Bargmann-Fock space of holomorphic functions square-integrable against a Gaussian weight. Remarkably, this function space possesses an index-theoretic stability, namely, it has an integer-quantized higher trace, whose physical meaning is the quantized Hall conductance discovered in the 1980s. Further experiments revealed the existence of exactly rational conductances, and this led us to discover corresponding fractionally-quantized trace formulae for Fock space. The technical basis is the Carey-Helton-Howe-Pincus theory of traces of commutators. Applications to exact quantization and topological insulators will also be discussed.

Date : 13 February 2025 (Thursday)
Time : 4:00p.m.-5:00p.m.
Venue : Room 3598 (Lift 27/28)

All are Welcome!