Prime $\text{II}_1$ factors arising from irreducible lattices in products of simple Lie groups of rank one

by

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Abstract

This talk will focus on structural properties of the $\text{II}_1$ factors associated to icc lattices in products of connected non-compact rank one simple Lie groups with finite center. In joint work with Daniel Drimbe and Adrian Ioana, we show that when such a lattice $\Gamma$ is irreducible, the associated $\text{II}_1$ factor $L(\Gamma)$ is prime, that is, cannot be decomposed as a tensor product of $\text{II}_1$ subfactors. This gives the first examples of prime $\text{II}_1$ factors arising from lattices in higher rank Lie groups. More generally, we show that whenever $\Gamma$ is a countable icc group that is measure equivalent to a product of non-elementary hyperbolic groups, it decomposes uniquely as a product $\Gamma = \Gamma_1 \times \cdots \times \Gamma_k$ such that $L(\Gamma) = L(\Gamma_1) \otimes \cdots \otimes L(\Gamma_k)$ is a unique prime factorization in the sense introduced by Ozawa and Popa in 2003.