A spectral gap characterization of full type III factors

by

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Abstract

A factor $M$ is full if it has no non-trivial centralizing sequence. In 1974, Connes proved a very strong spectral gap characterization of full $\text{II}_1$ factors which had many important applications. In this talk, we will present a generalization of this spectral gap characterization to type III factors. As an application, we prove that the continuous core of a type $\text{III}_1$ factor $M$ is full if and only if $M$ itself is full and its tau invariant is the usual topology. I will also talk about a joint work with Cyril Houdayer and Peter Verraedt where we obtain a similar spectral gap characterization of strongly ergodic equivalence relations.