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A noncommutative version of de Finetti's theorem

De Finetti's theorem states that an infinite exchangeable sequence of random variables is conditionally independent. An equivalent characterization of exchangeability was given in 1988 by Kallenberg in terms of spreadability.

I present in my talk a new theorem that transfers these classical results to an operator algebraic setting: An infinite exchangeable/spreadable sequence of noncommutative random variables is conditionally independent over its tail algebra. Here the noncommutative version of independence is provided by Popa's commuting squares as they are well known in subfactor theory. Surprisingly and in contrast to the classical results, the notions of exchangeability and spreadability are no longer equivalent. I will illustrate this new phenomena by deformed tensor shifts on a Jones tower.