

Independence in quantum probability

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This lecture presents the axiomatic classification of independences in quantum probability.

I. Examples of notions of noncommutative stochastic independence

1. Remarks on the history of quantum independence
2. Tensor, free and Boolean independence
3. Monotonic and anti-monotonic independence
4. Unification results

II. Classification of independences

1. The results of Speicher and Muraki
2. A fundamental lemma
3. Proof of the Muraki classification

III. Convolution products on dual groups

1. Functors to the category of commutative bialgebras
2. Convolution exponentials
3. Schoenberg correspondence