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Conditional Bi-Free Independence

In this talk, we discuss the recent extension of the notion of bi-free independence to two-state systems. This so called conditional bi-free independence enables one to keep track of more information pertaining to the actions of the left and right regular representations on reduced free product spaces thereby permitting a greater number of non-commutative probabilities to be modelled. The focus of this talk will be the definition of conditional bi-free independence, the combinatorial formula for both the moment and cumulant functions, the operator-valued setting, the partial R-transforms, and infinitely divisible conditional bi-free distributions. (Joint work with Y. Gu.)