

De Finetti reductions and parallel repetition of multi-player non-local games

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Roughly speaking, de Finetti type theorems allow to reduce the analysis of permutation-invariant scenarios to that of i.i.d ones. In this talk, I will present certain variants of such de Finetti reductions, and show how they can be used to study the parallel repetition of multi-player non-local games. More precisely, the problem one usually wants to solve in this context is the following: if players sharing certain physical resources cannot win one instance of a game with probability 1, does their probability of winning n instances of this game at the same time goes to 0 exponentially fast? Perhaps surprisingly, the answer to this question is not trivially "yes", even for classical players having shared randomness as only resource. Nevertheless, I will show that, e.g. in the case of no-signalling correlations between the players, it is indeed "yes" in (almost) full generality. This talk will be based on joint work with Andreas Winter, appearing mostly in arXiv[quant-ph]1506.07002.