

Quantum symmetry vs nonlocal symmetry

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We will introduce the notion of nonlocal symmetry of a graph G , defined as winning quantum correlation for the G -automorphism game that cannot be produced classically. We investigate the differences and similarities between this and the quantum symmetry of the graph G , defined as non-commutativity of the algebra of functions on the quantum automorphism group of G . We show that quantum symmetry is a necessary but not sufficient condition for nonlocal symmetry. In particular, we show that the complete graph on four points does not exhibit nonlocal symmetry. We will also see that the complete graph on five or more points does have nonlocal symmetry. This talk is based on joint work with David Roberson.