

Quantum no-signalling bicorrelations and quantum automorphisms of graphs

Michael Brannan

1. Abstract

I'll report on some recent joint work with Sam Harris, Ivan Todorov, and Lyudmyla Turowska (arXiv:2302.04268), where we introduce an analogue of bisynchronous correlations in the context of quantum input-quantum output non-local games. One of the main motivations for this work was to find a non-local game interpretation of the quantum automorphisms and isomorphisms of quantum graphs that have appeared recently in the literature. I'll explain how these considerations are related to tracial representations of quantum automorphism groups of matrix algebras, and in the case of ordinary graphs, lead us to consider a more general notion of quantum symmetry for graphs.