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*Quantum reductions of synchronous games to graph games*

Synchronous games that are equivalent, in some sense, preserve certain properties about winning strategies. In this talk, we will see how one can transform any synchronous game into a graph homomorphism game. More specifically, we'll see that every synchronous game is equivalent, in some weak sense, to a three-coloring game for an associated undirected graph, and we'll give an upper bound on the number of vertices required for the graph. As a result, we will obtain a quantum version of Lovasz's reduction theorem of the k-coloring problem of a graph to the 3-coloring problem of a graph that holds in all quantum models, extending and simplifying the work of Z. Ji in the finite-dimensional model. This work uses a weak *-equivalence of games that we will describe.