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Non-closure of the set of quantum correlations

Abstract: Consider a bipartite system with two observers, Alice and Bob, who are performing measurements in their labs. There are two models of quantum mechanics which describe the joint lab of Alice and Bob — the quantum model and the commuting quantum model. Tsirelson's original question asked whether these two models were essentially the same. We shall show that these two models are different for bipartite systems with five quantum experiments and binary outcomes for each experiment, by using the notion of correlation functions of graphs. (This is a joint work with Ken Dykema and Vern Paulsen.)