

Seminar

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Measurement incompatibility vs. Bell non-locality: an approach via tensor norms

Wednesday, October 12, 2022

at 14:15 h

ESI, Boltzmann Lecture Hall

Abstract: Measurement incompatibility and quantum non-locality are two key features of quantum theory. Violations of Bell inequalities require quantum entanglement and incompatibility of the measurements used by the two parties involved in the protocol. We analyze the converse question: for which Bell inequalities is the incompatibility of measurements enough to ensure a quantum violation? We relate the two questions by comparing two tensor norms on the space of dichotomic quantum measurements: one characterizing measurement compatibility and the second one characterizing violations of a given Bell inequality. We provide sufficient conditions for the equivalence of the two notions in terms of the matrix describing the correlation Bell inequality. We show that the CHSH inequality and its variants are the only ones satisfying it.

N. Schuch

October 11, 2022