ICFO

SEMINAR: Fully quantum inflation - Witnessing incompatibility of quantum states with quantum networks

ISAAC DAVID SMITH

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Seminar Room

Consider a quantum network consisting of several nodes, representing quantum systems, and connections between them. What quantum states can be prepared in such a network? In the context of quantum causality, this problem can be phrased as a causal compatibility problem: the networks represent a causal structure and a given multipartite quantum state is compatible with the network if there exist channels and input states that (i) produce the given state in question and (ii) respect the causal structure. In this talk, I will present a method for demonstrating the incompatibility of quantum states with certain networks. This method builds upon an existing technique developed for causal inference, known as the inflation technique, and makes use of operator inequalities developed for the quantum marginal problem. The result is a process by which one can derive witnesses o incompatibility with certain networks/causal structures, amenable to both numerically an analytically specified quantum states. I showcase the utility of such witnesses b demonstrating the incompatibility of various quantum states with the network known as th triangle scenario.

Hosted by: Prof. Dr. Antonio Acin