

THEORIEKOLLOQUIUM

Freitag, den 17.05.19 um 12:00 in MC 351

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Resource Theories in Quantum Mechanics: From purity to POVM based coherence

In many areas of Physics, valuable physical quantities can be formalized in the framework of a resource theory. Efficient quantum protocols require the resources entanglement, discord or coherence, whereas their amount is bounded by the purity of the quantum system. Goal of this talk is to relate these resource theories and show how physically motivated modifications change fundamentally some of their properties. After introducing the central building blocks of a resource theory, I will focus on the characteristics of the resource theories of purity, coherence, and entanglement and discuss relations between the different resources. In the last part of the talk I focus on our generalization of the resource theory of coherence that is based on positive operator valued measures (POVMs). Physical interpretations are discussed and a suited measure of POVM coherence is introduced. The main concepts are illuminated by examples like the qubit trine POVM.

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