

# Some preserver problems on quantum states

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Preserver problems appear in many fields of mathematics, such as functional analysis, geometry and algebra. This presentation is about some preserver problems concerning the mathematical description of quantum theory. Probably the most fundamental result in this respect is Wigner's famous unitary-antiunitary theorem on the structure of symmetry transformations. We present some recent results for commutativity preserving transformations on density operators. Commutativity is an important relation in quantum mechanics concerning not only observables but also states. It appears e.g. in the so-called no-broadcasting theorem, a well-known statement in quantum information theory. Maps on the set of density operators which preserve a certain measure of commutativity are also discussed.