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Transformations on density operators preserving quantum relative entropy or related quantities

Wigner's famous theorem on quantum mechanical symmetry transformations asserts that every bijective map on the set of all rank-one projections (that represent pure quantum states) on a Hilbert space which preserves the so-called transition probability is implemented by a unitary or an antiunitary operator. Motivated by this result we consider maps on the space of density operators (that represent mixed quantum states) which preserve different sorts of quantum relative entropy or certain related quantities (e.g., Jensen-Shannon divergence, f -divergence, quasi-entropy, Holevo bound) and describe their structure.