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Title: Pseudostochastic representation of quantum processes

Abstract:

In this work, we develop an approach of describing quantum dynamics and quantum measurements with pseudo-stochastic matrices (real matrices whose column sums to unity). Our approach is based on the representation of quantum states by probability distributions obtained with minimal informationally complete positive operator-valued measures (MIC-POVMs). We study different types of evolution equations and show how the developed approach shines a new light on revealing exclusively quantum features of state dynamics. The application of the approach to studying noisy intermediate-scale quantum (NISQ) devices is also discussed.