

中国科学院数学与系统科学研究院

量子论与信息论

学术报告

报告题目: Properties on Mixing Generalized Pauli Channels

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摘 要: There is an intuition from literature: every generalized Pauli channel of dimensional d could be written as $(d + 1)$ generalized Pauli dephasing channels (see [Phys. Rev. A 103, 022605 (2021)] as a reference). Surprisingly, we show that this intuition comes out not be true which motivates us to study the properties of a convex combinations of generalized Pauli channels instead of only considering just $(d + 1)$ generalized Pauli dephasing channels. We show that several properties known previously do preserve in this general setting. For example, any mixture of invertible generalized Pauli channels is still invertible. Moreover, we show that every Pauli channel ($d = 2$) can be written as a mixture of $(d + 1)$ Pauli dephasing channels and its generalizations to higher dimension do not hold, which provides a fundamental difference between the qubit and general qudit cases. Unlike the previously known properties, we show that the noninvertibility of the mixing channels is not necessary to ensure the resultant map to form a Markovian semigroup.