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Title: Factorization property of positive maps on C^* -algebras and its application

Abstract: The purpose of this talk is to present a factorization property of positive linear maps on C^* -algebras : Let A, C be C^* -algebras and let H be a Hilbert space. Suppose that $\alpha: A \rightarrow C$ is a linear map and $\beta: A \otimes B(H) \rightarrow C \otimes B(H)$ is a positive linear map and $\alpha \otimes id - \beta$ is positive. Then $\beta = \gamma \otimes id$ for some positive linear map $\gamma: A \rightarrow C$.

As an application we give a recipe of construction of indecomposable positive maps on C^* -algebras which is extension of Piani and Mora (revisited by Huber et al. in 2018). This method is useful to detect quantum entanglement in Quantum Information Theory. We also discuss about k -entanglement witness.

This is mainly based on joint work with B. V. Rajarama Bhat (Int. J. Quantum Inf. 18 (2020), no. 5, 2050019) and Tomasz Mlynik and Marcin Marciniak (arXiv:2104.14058, 2021).
