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Title: Roles of exposed indecomposable positive multi-linear maps in quantum information theory

Abstract:

Abstract: Positive multi-linear maps play essential roles to detect multipartite entanglement in quantum information theory. We need indecomposable positive maps in order to PPT entanglement. We discuss what kinds of map do we need to detect nonzero volume of PPT entanglement. Exposedness arise naturally in this context. We exhibit several examples of exposed indecomposable positive maps in $3 \otimes 3$ and $2 \otimes 2 \otimes 2$ cases. We also discuss how these maps can be used to study the structures of the convex set consisting of separable states. **Co-author(s):**