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Title:	Extremal extensions of entanglement witnesses and their connection with unextendable product bases
Authors:	Sengupta, R. (/jspui/browse?type=author&value=Sengupta%2C+R.) Arvind (/jspui/browse?type=author&value=Arvind)
Keywords:	Unextendable product bases Completely positive (CP) Entanglement detection
Issue Date:	2013
Publisher:	American Physical Society
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Abstract:	In this paper we describe a connection between unextendable product bases (UPB) and positive (P) maps which are not completely positive (CP). We show that inner automorphisms of the set of P maps which are not CP produce extremal extensions of these maps that help in entanglement detection. By constructing such an extension of the well-known Choi map, we strengthen its power to unearth positive under partial transpose entangled states. We further show that the class of maps generated from the Choi map via an inner automorphism naturally detects the entanglement of states in the orthogonal complement of certain UPB. This brings out a hitherto undiscovered connection between the Choi map and UPB. We also show that certain other recently considered extremal extensions are obtainable by such extensions of the Choi map.
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