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Michael Nathanson* (man6@stmarys-ca.edu). *Local state discrimination and transformation in multipartite systems.*

It is well-known that some sets of orthogonal multipartite quantum states cannot be perfectly distinguished using only local operations and classical communication (LOCC). This challenge can sometimes be overcome in the presence of additional shared entanglement. For instance, any maximally-entangled bipartite resource state enables quantum teleportation, which in turn allows any complete global measurement to be implemented.

We show an equivalence between the problems of local state discrimination and local state transformation; and demonstrate connections to algebraic structures used to understand multipartite entanglement. The result is a strong necessary condition for an entangled resource state to allow perfect state discrimination. This is based on recent papers with Bandyopadhyay and Halder. (Received February 15, 2018)