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Conversion witnesses for transforming quantum states under PPT-operations.

The primary goal in entanglement theory is to find conditions that determine whether one quantum state can be converted into another under the restriction to local operations and classical communication (LOCC). This is typically done by considering entanglement monotones, but this analysis is difficult due to the fact that the LOCC operations are difficult to describe. It is common to instead consider the larger, yet easier to describe mathematically, class of operations that preserve positivity under partial transpose (PPT). I consider the problem of finding conditions for PPT-conversion of bipartite states in the single-shot regime. In this talk, I will present a family of PPT-conversion witnesses and a new entanglement monotone that are based on the binegativity. I'll finish by presenting a new complete witness for PPT-conversion that is derived using duality properties of semidefinite programs.