

Dynamical entanglement

Carlo Maria Scandolo

Unlike the entanglement of quantum states, very little is known about the entanglement of bipartite channels, called dynamical entanglement. Here we work with the partial transpose of a superchannel, and use it to define computable measures of dynamical entanglement, such as the negativity. We show that a version of it, the max-logarithmic negativity, represents the exact asymptotic dynamical entanglement cost. We discover a family of dynamical entanglement measures that provide necessary and sufficient conditions for bipartite channel simulation under local operations and classical communication and under operations with positive partial transpose.