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Efficient local implementation of bipartite nonlocal unitaries[1] LI YU, ROBERT GRIFFITHS, Carnegie Mellon University, SCOTT COHEN, Duquesne University — By definition, nonlocal unitaries cannot be implemented locally. However, if spatially separated parties share nonlocal resources (i.e., entanglement), they may be able to implement a nonlocal unitary by performing only local operations and sharing classical information. We provide protocols for doing so, which generalize previously published methods and in many cases allow tasks to be accomplished with fewer nonlocal resources than is required when using teleportation. We also discuss our insight into how and why entanglement allows such a task to be accomplished, an insight which arises from a diagrammatic approach allowing one to picture the processing of quantum information.

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