

Abstract Submitted
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Numerical Calculations of the Three Tangle for Mixed States

SAMUEL RODRIQUES, PETER LOVE, Haverford College — We present a steepest descent convex roof optimization algorithm, using the Cayley parametrization of the unitary group, which can be used to calculate the convex roof of any entanglement monotone on mixed states. We use the algorithm to calculate the three tangle on a set of states for which the tangle is known analytically, and show that our results are in good agreement with the analytical calculations. We then randomly generate a set of full-rank three qubit states, of varied mixedness and tangle, calculate the tangle on these states using our convex roof algorithm, and also calculate the lower bound on the three-tangle which has been provided by Eltschka and Siewert[1]. We thus provide a profile of the strength of the Eltschka-Siewert bound, as a function of mixedness and tangle. [1] “Optimal Witnesses for Three Qubit Entanglement from Greenberger-Horne-Zeilinger Symmetry,” Eltschka, C. and Siewert, J., forthcoming. arXiv: 1204.5451

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