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Title:	Svetlichny's inequality and genuine tripartite nonlocality in three-qubit pure states
Authors:	Rungta, Pranaw (/jspui/browse?type=author&value=Rungta%2C+Pranaw)
Keywords:	Svetlichny's inequality
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Abstract:	The violation of the Svetlichny's inequality (SI) [Phys. Rev. D 35 3066 (1987)] is sufficient but not necessary for genuine tripartite nonlocal correlations. Here we quantify the relationship between tripartite entanglement and the maximum expectation value of the Svetlichny operator (which is bounded from above by the inequality) for the two inequivalent subclasses of pure three-qubit states: the Greenberger-Horne-Zeilinger (GHZ) class and the W class. We show that the maximum for the GHZ-class states reduces to Mermin's inequality [Phys. Rev. Lett. 65 1838 (1990)] modulo a constant factor, and although it is a function of the three tangle and the residual concurrence, large numbers of states do not violate the inequality. We further show that by design SI is more suitable as a measure of genuine tripartite nonlocality between the three qubits in the W-class states, and the maximum is a certain function of the bipartite entanglement (the concurrence) of the three reduced states, and only when their sum attains a certain threshold value do they violate the inequality.
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