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Correlations in a multi-qubit state D.L. ZHOU, School of Physics, Georgia Institute of Technology, Atlanta, Georgia 30332, USA, B. ZENG, Department of Physics, Massachusetts Institute of Technology, MA 02139, USA, Z. XU, Center for Advanced Study, Tsinghua University, Beijing 100084, China, L. YOU, School of Physics, Georgia Institute of Technology, Atlanta, Georgia 30332, USA — For an arbitrary partition of a multi-qubit system, we define a correlation measure, which is directly based on a series of multi-qubit correlation functions, to characterize the total correlation among different parts. As an instructive application of our correlation measures, we investigate the entanglement of graph states.

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