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Distribution of Bell-inequality violation versus multiparty-quantum-correlation measures KUNAL SHARMA, Louisiana State University , TAMOGHNA DAS, ADITI SEN (DE), UJJWAL SEN, Harish-Chandra Research Institute, Chhatnag Road, Jhunsi, Allahabad — Violation of a Bell inequality guarantees the existence of quantum correlations in a shared quantum state. A pure bipartite quantum state, having nonvanishing quantum correlation, always violates a Bell inequality. Such correspondence is absent for multipartite pure quantum states in the case of multipartite correlation function Bell inequalities with two settings at each site. We establish a connection between the monogamy of Bell-inequality violation and multiparty quantum correlations for shared multisite quantum states. We believe that the relation is generic, as it is true for a number of different multisite measures that are defined from radically different perspectives. Precisely, we quantify the multisite-quantum-correlation content in the states by generalized geometric measure, a genuine multisite entanglement measure, as well as three monogamybased multiparty-quantum-correlation measures, viz., 3-tangle, quantum-discord score, and quantum-work-deficit score. We find that generalized Greenberger-Horne-Zeilinger states and another single-parameter family of states, which we refer to as the special Greenberger-Horne-Zeilinger states, have the status of extremal states in such relations.

Kunal Sharma
Louisiana State University

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