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Multi-state Correlations and the Holevo Quantity

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Abstract:

The main issue of this talk are general relations between informational and geometric quantities for sequences of quantum states. Special attention is paid to constructs that properly scale with the number of states so as to allow for regularizations or thermodynamic limits. We obtain in particular for arbitrary quantum ensembles bounds on the Holevo quantity using correlation matrices. These latter are multi-state versions of the Hellinger von Neumann distance. Several corollaries, partial results, and conjectures involving matrices of fidelities are presented.