

[COVARIANCE DECOMPOSITION IN NO-SIGNALING THEORIES]

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Consider a network consisting of sources and nodes; each source sends signals to its connected parties, and each party receives signals from connected sources and produces an output. As parties are possibly connected to common sources, their outputs can be correlated. A main question is how limited such a correlation is. The answer to this question depends on the underlying physical theory (classical theory, quantum theory or beyond). In this talk, considering the general assumption of no-signaling on the underlying physical theory, it is shown that the covariance matrix of such a correlation can be decomposed into certain block matrices that are positive semidefinite. To prove this result, tools from graph theory and theory of dual cones are employed.