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Chordal Graphs and Distinguishability of Quantum States

In this talk, I'll discuss a graph and matrix theoretic approach I've developed with collaborators for the problem of distinguishing quantum product states in the fundamental quantum communication framework called local operations and classical communication (LOCC). We have found that chordal graphs are the most important subgraph type when it comes to distinguishability in 'one-way' LOCC, and we have derived a one-way LOCC characterization for chordal graphs that establishes a connection with the theory of matrix completions. I'll discuss our main results and some examples from our most recent work. This talk is based on joint work with Comfort Mintah, Michael Nathanson, Rajesh Pereira.