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Title: Advantages of multipartite entanglement in quantum networks

Quantum communication between distant parties is based on suitable instances of shared entanglement. During this talk, I will show how sharing multipartite entangled states allows to achieve tasks that are otherwise inefficient or not possible. The underlying method differs from standard repeater network approaches in that it uses a graph state instead of maximally entangled pairs to establish long-distance communication. I will explain how graph theoretic tools like local complementation allow us to treat quantum states as sets of equivalent states and examine examples of network architectures, where deploying these techniques provides an advantage.