ABSTRACT: Entanglement and nonlocality are two of the main phenomena underlying quantum technologies. In this thesis we examine the occurrence of these properties in systems of more than two particles. We order the set of multipartite states in terms of their entanglement using the framework of a resource theory. We also provide necessary and sufficient conditions for quantum networks to be entangled or nonlocal, and obtain drastically different behaviours depending on the level of noise contained in the shared states and on the network topology.

In addition, we propose a physical principle to constrain the correlations that are allowed in Nature, with the aim of understanding whether quantum theory is the only possible framework to explain them.