Towards a theory of quantum networks

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Quantum networks promise new modes of quantum communication beyond point-to-point applications, with the idea of a quantum internet providing a guiding vision. This talk will be concerned with conceptual and theoretical questions related to quantum networks. We will be concerned with how to manipulate multi-partite quantum information in quantum networks, addressing old questions in the theory of multi-partite entanglement (1). We will then turn to multi-partite repeaters and notions of quantum routing in quantum networks (2). If time allows, we will finally investigate how components of quantum networks can be certified (3). We will claim that in order to identify the full potential of quantum networks, more theory work needs to be done.

References

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