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## Entanglement entropy and area law in strongly-correlated systems

Understanding the nature of entanglement in strongly-correlated many-body systems is of prime importance in modern theoretical physics. In this lecture, I introduce the concept of entanglement entropies and the entanglement area law, and briefly review their implications in various topical issues. I then introduce a number of cases wherein the entanglement entropy can be analytically calculated, estimated, or bounded. In particular, I will discuss how the spectral gap, correlation functions, and the entanglement area law in strongly-correlated systems are mutually related to each other.

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