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# Duality and entanglement in lattice gauge theories

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The study of entanglement in quantum field theories provides insight into universal properties which are typically challenging to extract by means of local observables. However, calculations of quantities related to entanglement in gauge theories are limited by ambiguities that stem from the non-factorizability of the Hilbert space. On the other hand, Abelian lattice gauge theories are known to admit a dual description in terms of spin models, for which the replica trick and Rényi entropies are well defined. In the first part of the talk, I will discuss how duality transformations can be used to unambiguously derive the lattice geometry of the replica space for Abelian gauge theories. In the second part, I will present a numerical study of the entropic c-function of the (2+1)-dimensional $\mathbb{Z}_2$ gauge theory in the continuum limit, and compare it with analytical predictions from holographic models.

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