

Using the Ising Model to Explore the Confining Regime of Lattice Gauge Theories

jeudi 2 juin 2022 09:30 (1 heure)

Understanding the physical mechanisms behind confinement is one of the most important open problems in Lattice Gauge Theories (LGTs). In this talk, we discuss two exemplary applications of the Ising model to this problem.

In the first example, we study the quark-antiquark correlator in the LGT with $SU(2)$ gauge symmetry. We show that at high temperature, in the neighborhood of the deconfinement transition but still in the confining phase, this correlator can be mapped into the spin correlator of the Ising model and exploit the precise knowledge we have of this correlator to predict the behavior of the confining string.

In the second we study the behavior of interfaces in the 3d Ising model which, using duality, can be mapped into the behavior of a (closed) confining string.

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