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Bound states and Interquark Potential in High Temperature Lattice Gauge Theories

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Conformal perturbation is a powerful tool to describe the behaviour of statistical mechanics models and quantum field theories in the vicinity of a critical point. It was widely used in the past to describe two dimensional models and has been recently extended, thanks to the remarkable results of the bootstrap approach, also to three dimensional models.
We show here that it can be also used to describe the behaviour of (3+1) lattice gauge theories in the vicinity of a critical point.
We discuss as an example the behaviour of Polyakov loop correlators in the vicinity of the deconfinement transition of the (3+1) SU(2) Lattice Gauge Theory. We show that the short distance behaviour of the correlator (and thus of the interquark potential) is precisely described by conformal perturbation theory and that this result can be used to
improve our understanding of the spectrum of bound states of the theory.

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