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Chiral transition via Strong Coupling expansion

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We investigate the chiral transition of $U(N)$ lattice gauge theory based on the strong coupling expansion. A generalized vertex model with vertices and weights derived from the tensor network approach of the dual representation of lattice QCD with staggered fermions is used and the configurations are sampled by the Metropolis algorithm. We study the chiral transition in the chiral limit and focus on the beta dependence of the second order chiral transition temperature T_c for different values of the gauge coupling. We compare different orders of truncations of the strong coupling expansion: $\mathcal{O}(\beta^0)$, $\mathcal{O}(\beta^1)$, and $\mathcal{O}(\beta^2)$. We comment on the prospects of extending to $SU(3)$ at finite density.

Topical area

QCD at Non-zero Temperature

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