Contribution ID: **97** Type: **Talk**

Topological String Configurations in Finite-Temperature SU(3) Gauge Theory

Wednesday 5 November 2025 10:00 (20 minutes)

We study Z_3 topological string defects in the deconfined phase of pure SU(3) gauge theory via lattice Monte Carlo simulations. These defects occur at the junctions of center domains, where the Polyakov loop winds nontrivially around spatial loops. We determine the string free energy from the action difference between ensembles with and without the defect on $60\times60\times4$ lattices ($N_\tau = 2$). The results show that the string energy is dominated by attached center-domain walls. Near T_c the string tension σ/T^2 rises sharply, while at larger β it grows linearly. The extracted interface tensions agree with previous lattice determinations, validating the approach. Our results demonstrate that topological strings provide a useful probe of nonperturbative interface dynamics in hot SU(3) gauge theory.

Parallel Session (for talks only)

QCD at nonzero temperature and density

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Session Classification: QCD at nonzero temperature and density