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Functional renormalization of QCD in 1 + 1 dimensions: Four-fermion interactions from quark-gluon dynamics

Tuesday 27 May 2025 16:00 (1 hour)

Quantum chromodynamics in two spacetime dimensions is investigated with the Functional Renormalization Group. We use a functional formulation with covariant gauge fixing and derive Renormalization Group flow equations for the gauge coupling, quark mass and an algebraically complete set of local fermion-fermion interaction vertices. The flow, based on a convenient Callan–Symanzik-type regularization, shows the expected behavior for a super-renormalizable theory in the ultraviolet regime and leads to a strongly coupled regime in the infrared. Through a detailed discussion of symmetry implications, and variations in the gauge group and flavor numbers, the analysis sets the stage for a more detailed investigation of the bound state spectrum in future work.

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