

Abstract Submitted
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Chiral symmetry breaking in QED₃ in presence of irrelevant interactions: a renormalization group study KAMRAB KAVEH, IGOR HERBUT — Motivated by recent theoretical approaches to high temperature superconductivity, we study dynamical mass generation in three dimensional quantum electrodynamics (QED₃) in presence of irrelevant four-fermion quartic terms. The problem is reformulated in terms of the renormalization group flows of certain four-fermion couplings and charge, and then studied in the limit of large number of fermion flavors N . We find that the critical number of fermions N_c below which the mass becomes dynamically generated depends continuously on a weak chiral-symmetry-breaking interaction. One-loop calculation in our gauge-invariant approach yields $N_{c0} = 6$ in pure QED₃. We also find that chiral-symmetry-preserving mass cannot become dynamically generated in pure QED₃.

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