

## Critical Number of Fermion Flavors at Finite Chemical Potential in QED<sub>3</sub>

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**Abstract:** We propose a new method for calculating the dressed fermion propagator at finite chemical potential in QED<sub>3</sub> under the rainbow approximation of Dyson-Schwinger equation. In the above approximation, we show that the dressed fermion propagator at finite chemical potential  $\mu$  has the form  $\hat{S}(\tilde{p})=i\gamma\cdot\tilde{p}A(\tilde{p}^2)+B(\tilde{p}^2)$  with  $\tilde{p}_\mu=(\vec{p}, p_3+i\mu)$ . Using this form of fermion propagator at nonzero chemical potential, we investigate the Dyson-Schwinger equation for the dressed fermion propagator at finite chemical potential and study the effects of the chemical potential on the critical number of the fermion flavors.

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Key words: DS equation, chemical potential, critical number of the fermion flavors

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