

# Dynamical mass generation including the Chern-Simons term in QED3

## Abstract content

We study the gauge covariance of the fermion propagator in Maxwell–Chern–Simons planar quantum electrodynamics (QED3) considering four-component spinors with parity-even and parity-odd mass terms for both fermions and photons. Starting with its tree-level expression in the Landau gauge, we derive a non-perturbative expression for this propagator in an arbitrary covariant gauge by means of its Landau–Khalatnikov–Fradkin transformation (LKFT). We compare our findings in the weak coupling regime with the direct one-loop calculation of the two-point Green function and observe perfect agreement up to a gauge-independent term. We also reproduce results derived in earlier works as special cases of our findings.

**Primary author(s) :** Mr. SÁNCHEZ MADRIGAL, Saúl (Instituto de Física y Matemáticas, Universidad Michoacana de San Nicolás de Hidalgo)

**Co-author(s) :** Dr. RAYA MONTAÑO, Alfredo (Instituto de Física y Matemáticas, Universidad Michoacana de San Nicolás de Hidalgo); Dr. BASHIR, Adnan (Instituto de Física y Matemáticas, Universidad Michoacana de San Nicolás de Hidalgo)

**Presenter(s) :** Mr. SÁNCHEZ MADRIGAL, Saúl (Instituto de Física y Matemáticas, Universidad Michoacana de San Nicolás de Hidalgo)