**Erratum: Critical behavior of reduced QED_{4,3} and dynamical fermion gap
generation in graphene**
[Phys. Rev. D **94**, 114010 (2016)]

A. V. Kotikov and S. Teber

(Received 28 May 2019; published 19 June 2019)

DOI: [10.1103/PhysRevD.99.119902](https://doi.org/10.1103/PhysRevD.99.119902)

In light of our recent paper [1], where gauge independent results for dynamical fermion mass generation in QED₃ were obtained, we would like to update the results of our paper [2] on reduced QED_{4,3}.

The results of Ref. [2] have been obtained using the transformations (6), (19), and (20) in [2], which map the results related to the critical behavior of QED₃ (obtained in [3] at that time) to the corresponding ones in reduced QED_{4,3}.

In our recent paper, Ref. [1], we have proven the complete cancellation of the gauge-dependent part, $\tilde{S}(\alpha, \xi)$, contributing to N_c , the critical fermion flavor number which is such that dynamical mass generation appears at $N < N_c$, so the results for N_c in QED₃ now are exactly gauge independent.

Hence, from the mapping between QED₃ and reduced QED_{4,3}, the critical values $\alpha_c(N)$ and N_c in the framework of reduced QED_{4,3} are now exactly gauge independent too. Actually, such gauge-independent values have already been obtained in [2] as particular cases and are given by Eqs. (46) and (47).

Now Eqs. (46) and (47) are to be considered as the only correct next-to-leading order (NLO) results for the critical behavior of reduced QED_{4,3}.

We would like to add some comments:

- (i) We note that $\tilde{N}_c$ in Eq. (47) should be replaced by N_c .
- (ii) Moreover, contrary to what is written between (46b) and (47), we would like to note that the value of N_c does not coincide with the corresponding $N_c = 2.85$ in QED₃ (see Ref. [1]) but is slightly higher. This is due to the absence of the NLO correction $\hat{\Pi}_2$ to the polarization operator in the case of reduced QED_{4,3} while this factor comes with a negative sign in QED₃ case. Concerning this fact, we refer the reader to the short discussion after Eq. (32) in [2].

[1] A. V. Kotikov and S. Teber, *Phys. Rev. D* **99**, 059902 (2019).

[2] A. V. Kotikov and S. Teber, *Phys. Rev. D* **94**, 114010 (2016).

[3] A. V. Kotikov and S. Teber, *Phys. Rev. D* **94**, 114011 (2016).