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Wilson is not anomalous: on gauge anomalies in SMEFT

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The use of Effective Field Theories (EFTs) in the search of NP is becoming more and more important given the lack of clear experimental signs of BSM physics. In particular, the Standard Model EFT (SMEFT) has become one of the most popular choices. Hence, the interest in revisiting EFTs is widespread in the community. The importance of chiral anomalies, either in gauge or global symmetries, can not be overstated because of their phenomenological and formal importance. A natural question then arise: can higher-dimensional operators in an EFT generate gauge anomalies if the renormalizable part of the EFT is anomaly-free? I will discuss whether dimension-6 operators in SMEFT can induce gauge anomalies. We find a negative answer, contrarily to what was claimed by Cata et al in a recent paper (2011.09976) and therefore I'll discuss why the triangle-diagram computations performed in the aforementioned paper lead to apparent anomalies. I will provide arguments based on conserved currents and a more innovative derivation based on the smart construction of an EFT. Poster based on 2012.07740.

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