

Diagrammatic structures of the Nielsen identity

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The Nielsen identity is crucial for the gauge dependence of various observables associated with the effective potential. Usually when calculated up to a definite order, it is difficult to acquire a gauge-independent result since the incomplete resummation processes. In the literature, Nielsen identity was usually induced through a path-integral way, while the discussions of the gauge-dependence up to a particular perturbative order were uncommon. In this talk, I would like to anatomize the Feynman diagrams to see how this identity works perturbatively. People can anticipate the origin of the perturbative imbalance of this identity through my calculations.

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