

Nonlocality of the effective interaction of the radiation field with a strong external electromagnetic field

Gainutdinov R., Khamadeev M., Mutygullina A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We investigate the problem of nonlocality of the effective interaction of the radiation field with a strong external field. It is shown that the use of a Lagrangian or Hamiltonian interaction density with a nonlocal form-factor for parametrizing this interaction is inconsistent. An interaction operator that allows one to take into account the natural the natural nolocality of this interaction is derived from the analysis of the relevant Feynman diagrams of quantum electrodynamics.

<http://dx.doi.org/10.1117/12.801758>

Keywords

External electromagnetic field, Light-by-light scattering, Nonlocal interaction, Radiation field