

Kinetic description of the electron-positron plasma created from vacuum under the action of a strong laser field

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We consider a self-consistent kinetic description of a electron-positron-gamma plasma, generated from the vacuum in a focal spot of two counterpropagating laser pulses. At the moment in our model includes purely time-dependent external (laser) field, but properly takes into account the semiclassical internal (plasma) field. While nonperturbative kinetic description of electron-positron pair production from vacuum have been previously addressed, quantum radiation is included in such a model for the first time. The basis of this kinetic description provides by using the BBGKY-chain, which we truncate at second order of perturbation theory by taking into account only the annihilation and bremsstrahlung channels.

The goal of this work is an extended generalization of the results [1].

[1] D.B. Blaschke, V.V. Dmitriev, G. Roepke, and S.A. Smolyansky, PRD 84, 085028 (2011).

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