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Laser-Induced Electron-Positron Pair Creation – Relevance of Phase Effects[1] KATARZYNA KRAJEWSKA, JERZY KAMIŃSKI, Institute of Theoretical Physics, University of Warsaw — With recent technological progress and experimental availability of extremely powerful lasers, yielding a ponderomotive energy shift of the order of magnitude $m_e c^2$ and beyond, it has become of interest to reexamine fundamental processes of quantum electrodynamics (QED); in particular, the formation of electron-positron pairs by means of laser radiation [1]. The electron-positron pair creation in collisions of a relativistic nucleus with a two-color laser field is investigated using the standard approach of QED [2]. We consider the case when both components of the laser field have commensurate frequencies and comparable strengths. We analyze the dependence of both the angular distributions of created particles and the total probability rates of pair production on a phase coherence of a driving laser field.

[1] F. Ehlotzky, K. Krajewska, and J. Z. Kamiński, Rep. Prog. Phys. **72**, 046401 (2009).
[2] K. Krajewska and J. Z. Kamiński, Phys. Rev. A (submitted).

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