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高強度光子場の伝搬による磁場生成

Magnetic field generation behind intense photon propagation

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A new mechanism of self-generation of magnetic field induced by interaction between an intense coherent photon pulse and a uniform plasma medium is discussed by using plasma particle-in-cell simulations. Due to the Raman side scattering in the course of photon propagation, electron can be preferentially heated in perpendicular direction to the laser pulse propagation, and the electron temperature anisotropy can be subsequently produced. As a result the Weibel instability due to the temperature anisotropy can feature the generation of magnetic field behind the photon pulse.

キーワード:相対論プラズマ,磁場生成,輻射場,ラマン散乱,ワイベル不安定

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