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Spectrum and Angular Distribution of γ-rays from Radiative Damping in Extremely Relativistic Laser-Plasma Interaction[1] RISHI PANDIT, YASUHIKO SENTOKU, University of Nevada Reno — Effects of the radiative damping in the interaction of extremely intense laser ($> 10^{22}$W/cm^2) with dense plasma is studied via a relativistic collisional particle-in-cell simulation, PICLS. When the laser intensity is getting close to 10^{24} W/cm^2, the effect of quantum electrodynamics (QED) appears. We had calculated γ-rays from the radiative damping processes based on the classical model [1], but had taken into account the QED effect [2] in the spectrum calculation. In ultra-intense laser-plasma interaction, electrons are accelerated by the strong laser fields and emit γ-ray photons mainly via two processes, namely, Bremsstrahlung and radiative damping. Such relativistic γ-ray has wide range of frequencies and the angular distribution depends on the hot electron source. Comparing the details of γ-rays from the Bremsstrahlung and the radiative damping in simulations, we will discuss the laser parameters and the target conditions (geometry and material) to distinguish the photons from each process and also the QED effect in the γ-rays spectrum at the extremely relativistic intensity.

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