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Various Forms of Power Radiated via Radiative Damping by Using Higher Order Terms in Super Intense Laser Matter Interaction[1] RISHI PANDIT, EDWARD ACKAD, Department of Physics, Southern Illinois University Edwardsville, IL, EMMANUEL D'HUMIERES, Department of Physics, University of Bordeaux, Bordeaux, France, YASUHIKO SENTOKU, Institute of LaserEngineering, Osaka University, Osaka, Japan. — We had derived the radiation reaction terms including the higher orders and implemented in PICLS codes [R. Pandit and Y. Sentoku, Phys. Plasmas 19, 073304(2012)]. We also derived the power radiated via radiative damping using higher order terms of radiative damping for the first time in various forms, the angular distribution, the spectral distribution or the combined angular and spectral distributions of radiation. These various forms of power radiated in the interaction of extremely intense laser ($> 10^{22} W/cm^2$) with dense plasma are studied with a help of a collisional particle-in-cell simulation, PICLS coupled with radiation transport code. It is found that the direction of motion of electron is a strongly preferred direction of emission at high energies. The narrow cone of radiation generated by an energetic electron indicates that only a small part of the trajectory is effective in producing radiation observed in a given direction, which also implies that very high frequencies are emitted. We will discuss the laser intensity and electron energy dependence of the entire spectral and angular distribution of radiation via radiative damping in super intense laser matter interactions.

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