

Coherently Enhanced Radiation Friction at Moderate Laser Intensities and Particle Energies

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We reconsider the footprints of radiation friction in a head on collision of a bunch of relativistic charged particles with a laser pulse by demonstrating that in a dense enough bunch forward and backward radiation and radiation friction are coherently enhanced. This should make it possible to observe radiation friction effects in laser-matter interactions at much lower energies and laser intensities than accepted ever previously. A simple estimate for the energy losses of the particles in the bunch over the collision due to radiation friction in terms of laser and bunch parameters is derived and validated by comparing with the results of three dimensional particle-in-cell simulations.