Abstract Submitted
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??ray production and transport in ultra-fast heated high Z matter[1] RISHI PANDIT, YASUHIKO SENTOKU, University of Nevada Reno — Radiation transport code coupled with fully relativistic collisional Particle-in-Cell (PIC) code, PICLS, has been developed to study the transport of X-ray photons produced in laser-solid interaction. We have implemented the differential cross-section of emitted radiation with respect to frequency and emission angle of Bremsstrahlung and also the radiative damping to simulate high energy photons, ??ray, production and transport in ultra-intense laser - matter interactions. We discuss the laser energy dependence of the emission energy and the intensity dependence of the angular distribution of ??rays. By solving the transport of hard X-rays we find that high energy photons emitted by relativistic electrons are co-moving with the electrons and they are intensified continuously in the Bremsstrahlung process. As a result the ??rays have the signature of the fast electrons' temporal and spatial distribution. We also calculate the number of pairs by solving the Bethe-Heitler cross-section in the radiation transport simulation. Comparing the details of ??rays via Bremsstrahlung and radiative damping with varying laser intensities, we will discuss the laser parameters and the target conditions (material) to increase the ??ray yields.

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Rishi Pandit
University of Nevada Reno

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