

298. Title: Terahertz radiation from a laser plasma filament

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Abstract: By the use of two-dimensional particle-in-cell simulations, we clarify the terahertz (THz) radiation mechanism from a plasma filament formed by an intense femtosecond laser pulse. The nonuniform plasma density of the filament leads to a net radiating current for THz radiation. This current is mainly located within the pulse and the first cycle of the wakefield. As the laser pulse propagates, a single-cycle and radially polarized THz pulse is constructively built up forward. The single-cycle shape is mainly due to radiation damping effect.