

Abstract Submitted
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A comparative study of Terahertz radiation generation by beating of two spatial-Gaussian / super-Gaussian lasers HITENDRA K. MALIK, ANIL K. MALIK, IIT Delhi — The subject *terahertz (THz) radiation generation* has got worldwide attention due to its diverse applications in nonlinear THz spectroscopy, imaging, topography, material characterization, etc. For generation of THz radiation, short pulse lasers have widely been employed for their interaction with semiconductors, air, gases and plasmas. In the present work, we propose to achieve THz radiation based on beating of two spatial-Gaussian or super-Gaussian lasers having different frequencies and wave numbers but the same electric field amplitudes in a periodic density plasma. In this situation, a ponderomotive force is attained along the direction of propagation and also in the transverse direction. Hence, the transverse component of current resonantly excites the radiation with efficiency of about 10^{-3} . The importance of laser-beam-width, amplitude and periodicity of density structure is discussed and a comparative study is made for the two types of lasers.

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