

Abstract Submitted
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Role of phase difference between superposing lasers and magnetic field for efficient terahertz radiation generation by tunnel ionization¹ ANIL KUMAR MALIK, HITENDRA K. MALIK, IIT Delhi — The generation of terahertz (THz) radiation is an active field of research due to its applications in THz spectroscopy, material characterization, imaging, topography, etc. Since plasma can sustain high field and it is a nonlinear medium, the plasma based schemes are very attractive techniques for the THz radiation generation. In the present work, we make use of tunnel ionization, where quick ionization is achieved with the help of two femtosecond lasers having a phase difference. Then the generated plasma cylinder is caused to oscillate and radiate at the frequency in the THz range. An application of DC magnetic field on the plasma cylinder helps getting a directional THz radiation emission. The role of phase difference and the magnetic field for efficient THz radiation generation and a control on the emission of radiation are discussed. The conversion efficiency of the present scheme is $\sim 10^{-3}$ and it supersedes several other schemes.

¹THz generation

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