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Emission of Strong Terahertz pulses from Laser Wakefields in weakly coupled Plasma

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Now a days Terahertz frequency domain of electromagnetic spectrum has been a very important and integrated part of technology based on their application as a potential field of research due to its viability. Terahertz radiation is nonionizing electro-magnetic radiation with submillimeter wavelength, which can be used non-invasively to several applications. here in the present paper we study the effect of magnetic field, laser pulse parameters, plasma density and different profiling of laser pulses on the mechanism of terahertz generation from laser plasma interaction. Terahertz fields are computed after evaluation of the components of wakefield those are generated due to propagation of highly intense pulse in a uniform density magnetoactive plasma. The effect of different profile of lasers on the magnitude of wakefield are investigated and further theoretical description is presented for emission of terahertz pulses. It is also observed that there is no wakefield produced in the direction of the external magnetic field whereas components of wakefield are observed in the direction parallel and perpendicular to the axis of propagation of laser perpendicular to the direction of magnetic field. this transverse component of wakefield is responsible for causing emission of strong terahertz pulses.

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