

Abstract Submitted  
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**Terahertz Radiation from Laser Created Plasma by Applying a Transverse Static Electric Field** TAKUYA FUKUDA, KOJI KATAHIRA, NOBORU YUGAMI, Utsunomiya Univ, YASUHIKO SENTOKU, ILE Osaka Univ, HITOSHI SAKAGAMI, National Institute for Fusion Science, HIDEO NAGATOMO, ILE Osaka Univ — Terahertz (THz) radiation, which is emitted in narrow cone in the forward direction from laser created plasma has been observed by N.Yugami *et al.* [1]. Additionally, Löffler *et al.* have observed that a significantly increased THz emission intensity in the forward direction when the transverse static electric field is applied to the plasma [2]. The purpose of our study is to derive the mechanism of the THz radiation from laser created plasma by applying the transverse static electric field. To study the radiation mechanism, we conducted 2D-PIC simulation. With the static electric field of 10 kV/cm and gas density of  $10^{20} \text{ cm}^{-3}$ , we obtain 1.2 THz single cycle pulse radiation, whose intensity is  $1.3 \cdot 10^5 \text{ W/cm}^2$ . The magnetic field called “picket fence mode” is generated in the laser created plasma. At the boundary surface between the plasma and vacuum, the magnetic field is canceled because eddy current flows. We conclude that the temporal behavior of the magnetic field at the boundary surface radiates the THz wave. [1] N. Yugami *et al.*, Jpn. J. Appl. Phys. **45**, L1051 (2006). [2] T. Löffler *et al.*, Appl. Phys. Lett. **77**, 453 (2000).

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