

Abstract Submitted  
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**An interaction between strong laser field and carbon nanotubes<sup>1</sup>**

TOSHIHIRO TAGUCHI, Setsunan University, THOMAS ANTONSEN, HOWARD MILCHBERG, University of Maryland, MASAHIKO INOUE, Setsunan University — An interaction between strong laser field and carbon nanotubes has been investigated using a particle-in-cell code, which includes a collisional and ionization effect. Carbon nanotubes are considered as a nano-scale solid cylinder. According to a series of our works about laser-cluster interaction using the PIC code[1–2], electrons in a nano-cylinder absorb large amount of laser energy through a resonant absorption. Such a strong excitation of electron oscillation can cause a nonlinear excitation of a low frequency radiation such as terahertz waves. We will present about the simulation results of the interaction between carbon nanotubes and a strong laser field. We will also show a possibility of a coherent radiation from a periodically arrayed carbon nanotubes.

[1] T. Taguchi, et al., Phys. Rev. Lett., 92, 20, 2004, 205003.

[2] T. M. Antonsen, Jr., et al., Phys. Plasmas 12, 5, (2005), 056703.

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