Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

The effect of Coulomb collision on strong field QED in laser-plasma interaction.[1] XIAOLIN JIN, YUNXIAN TIAN, JIANQING LI, BIN LI, University of Electronic Science and Technology of China — In recent years, the strong field quantum electrodynamics (QED) effects in laser-plasma interaction are paid more and more attention. Generally, the Coulomb collisions between electrons and ions and the collisions for charged particles of the same species in the plasma are considered in particle-in-cell plus Monte Carlo Collision (PIC/MCC) simulations. In this paper, the effect of the Coulomb collision on QED in laser-plasma interaction has been studied using our PIC/MCC code, BUMBLEBEE 1D, which can be used to analyze the QED effects. The binary Coulomb collision algorithm was implemented using TA model, in which a novel sorting method was applied. The evolutions of the particles in ultrahigh intensity laser (about 10^{23}W/cm^2) interaction with aluminum foil target were observed. The effects of the collision on the yields of photons and e+-e- pairs were discussed. The results show that there are some differences in the yields whether considering the Coulomb collision in QED-plasmas.

[1]National Natural Science Foundation of China (Grant No. 61301054)

Xiaolin Jin
University of Electronic Science and Technology of China

Date submitted: 02 Jan 2017 Electronic form version 1.4