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Coherent radiation from the interaction of high-power femtosecond laser with a thin film target and the generation of attosecond pulses
SANG-YOUNG CHUNG, Pusan National University, KITAE LEE, Korea Atomic Energy Research Institute, DONG EON KIM, POSTECH, SEOK WON HWANG, HAE JUNE LEE, Pusan National University — The simulation studies about the generation of attosecond X-ray pulses have been reported from the relativistic non-linear Thomson scattering (RNTS) of a single electron [Phys. Plasmas 12, 043107 (2005)]. However, even if one electron generates an ultrashort pulse, the radiation is summation from many electrons in a real experiment. The coherency among the RNTS radiation from each electron needs to be considered to confirm the generation of ultrashort pulse radiations. In this presentation, the coherent RNTS radiation from a thin film target is proposed and verified using a particle-in-cell simulation. The radiation from RNTS is squeezed in a narrow angular region and the specific angle is varied by the laser intensity. The coherence is controlled from the angular property of the radiation and attosecond pulses are generated.

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