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**Attosecond X-ray pulse generation from coherent relativistic nonlinear Thomson scattering of high power femtosecond laser with a nanowire array** SANG-YOUNG CHUNG, SEOK WON HWANG, HAE JUNE LEE, Pusan National University — The attosecond pulse generation from the relativistic nonlinear Thomson scattering (RNTS) was studied in a single electron case [K. Lee et al., Phys. Rev. E 67, 026502 (2003)]. However, an actual electron source (solid, plasma or electron bunch) includes many electrons which show collective behaviors different from single electron motion. Even though each electron in the source radiates attosecond pulses, the whole of the electrons radiates much longer pulse if the attosecond pulses are not coherent. In this presentation, nanowire array and mirror reflection scheme are proposed as a coherent condition and are verified by a series of particle-in-cell simulation. Even though a thin film target also satisfies the mirror condition, a nanowire array target is chosen because strong static field between charged particles in the thin film target disturbs coherence. The case of the thin film target is also studied for a comparison.

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