

Abstract Submitted  
for the DPP20 Meeting of  
The American Physical Society

**Radiation generated by magnetized plasma dipole oscillation in a non-uniform plasma** HYUNG SEON SONG, KYLYCHBEKOV SALIZHAN, MINSUP HUR<sup>1</sup>, Ulsan Natl Inst of Sci Tech — We investigate the properties of Plasma Dipole Oscillation (PDO) in a magnetic field by particle-in-cell (PIC) simulations. By colliding two detuned laser pulses, an isolated, oscillating lump of electrons (i.e. PDO) is produced in the plasma. The oscillation mechanism of PDO is the plasma oscillation and hence, the PDO oscillates with the plasma frequency. When the PDO is magnetized by an external magnetic field aligned perpendicular to the PDO oscillation, the frequency of PDO splits into the left and right cut-offs of the X-mode. By two- and three-dimensional particle-in-cell simulations, we demonstrate that the two cut-off frequencies are imprinted to the radiation emitted from the PDO. Hence the PDO-radiation can be used for simultaneous probe of magnetic field and the plasma density of a non-uniform magnetized plasma. We discuss the decay and diffraction of the R- and L-cutoff radiations, for utilization of the technique for a novel diagnostic method of a magnetized plasma

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Date submitted: 29 Jun 2020

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