

Abstract Submitted  
for the DPP13 Meeting of  
The American Physical Society

**The Effect of Magnetic Field on the RF Collisional Sheath** YING WANG, XIANZHU TANG, Los Alamos National Laboratory, T-5 TEAM — The Chodura sheath has been widely studied for decades. For an oblique magnetic field, there exists in front of the Debye sheath (of thickness several Debye length, in front of the solid surface) a Chodura sheath, also known as the magnetic pre-sheath, of thickness several ion Larmor radius. A 1D particle-in-cell (PIC) code [1] with Monte Carlo collision methods is upgraded for the magnetic field with arbitrary angles. The effect of the magnetic field on RF sheath parameters, such as ion fluxes to the surface and ion/neutral energy and angular distributions, is investigated. A special attention is given to the angles of a few degrees between the magnetic field and the surface. The PIC simulation results are compared with the self-consistent analytical RF sheath model [2] for the magnetic field parallel to the surface.

[1] J. P. Verboncoeur, M. V. Alves, V. Vahedi, and C. K. Birdsall, Simultaneous Potential and Circuit Solution for 1d Bounded Plasma Particle Simulation Codes J. Comp. Phys. 104 (1993) 321.

[2] M. A. Lieberman, Model of Magnetically Enhanced, Capacitive RF discharges, IEEE Trans. Plasma Sci., 19 (1991) 189

Ying Wang  
Los Alamos National Laboratory

Date submitted: 10 Jul 2013

Electronic form version 1.4