

Abstract Submitted
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Ion and Electron Energy-Angle Distribution Functions at the Material Wall in Magnetized Plasmas DAVIDE CURRELI, RINAT KHAZIEV, University of Illinois at Urbana Champaign — The supersonic acceleration occurring at the plasma-material interface in presence of an oblique magnetic field is analyzed performing kinetic-kinetic particle-in-cell simulations (kinetic ions, kinetic electrons), comprising the effect of collisions. The energy-angle distribution functions of both ions and electrons are obtained at several locations from the bulk quasi-neutral plasma to the wall, in order to show how the plasma kinetics changes during the acceleration across the presheath up to the material wall. We highlight how collisional processes affect the structure of the sheath and presheath and modify the energy-angle distributions at the material wall. We present the scaling factor of the average ion and electron energy and peak pitch angle at the wall as a function of the bulk plasma conditions, for use in the correlation of fluid plasma models to material models.

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