

# Velocity Profile and modulation frequency of Ions in a Magnetized Plasma Sheath using kinetic trajectory simulation method

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In all bounded plasmas, plasma sheath plays an important role in its stability as well as in determining the particle fluxes and energies reaching the wall. Velocity variation as well as modulation frequency of ions in a magnetized plasma sheath has been studied for different obliqueness as well as strength of the field. Due to sharp gradients of physical parameters in the sheath region fluid theory has singularity and we have used the kinetic trajectory simulation model, where the characteristic equations of motion are solved iteratively unless a self-consistent state is achieved for given particle distributions at boundaries. Variation of ion velocities, their mean values, maximum amplitude, damping factor as well as frequency of oscillation are studied for constant magnetic field at different obliqueness as well as for different magnetic fields considering the same obliqueness. The kinetic approach is expected to give better understanding of velocity profiles and hence is of interest in divertor type Tokamaks, where the field lines outside the last-closed-flux-surfaces strike the wall at different angles.

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