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How fast are ions lost from plasma with two ion species?[1] NOAH HERSHKOWITZ, DONGSOO LEE, University of Wisconsin-Madison, GREG D. SEVERN, San Diego University, LUTFI OKSUZ, Suleyman Demirel Univ, Isparta, Turkey — The Bohm sheath criterion in single and two-species plasma is studied with Laser-Induced Fluorescence (LIF) of Ar ions using a diode laser in low pressure unmagnetized dc hot filament Ar and Ar/Xe discharges confined by surface multi-dipole magnetic fields. The Ar ion velocity distribution function is measured as a function of position relative to a negatively biased boundary plate. Ion acoustic wave phase velocity data are combined with the argon LIF data to determine the Xe ion velocity. Emissive probes provide the plasma potential profile in the plasma sheath and presheath. The ion concentrations of the two-species in the bulk plasma are calculated from measured ion acoustic wave phase velocity. Results are compared with previous experiments with Ar-He plasmas in which the Ar ions were the heavier ion species. Preliminary results are consistent with both ion species reaching close to the system sound velocity at the presheath/sheath boundary.

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