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Ion-ion Plasmas production and investigation GARY LERAY, PASCAL CHABERT, NICOLAS PLIHON, JEAN-LUC RAIMBAULT, LPTP CNRS Ecole Polytechnique — A magnetized low-pressure electronegative discharge was used to produce ion-ion plasmas. We used both Ar/O_2 and Ar/SF_6 gas mixtures. The cylindrical plasma core is produced by an helicon wave, generated by a Boswell-type antenna excited at 13.56 MHz. The magnetic field strength is such that electrons are magnetized while ions are not, resulting in an electron-free plasma at the edge of the cylinder. The negative ion fraction was measured as a function of the radius by electrostatic probes and laser-induced fluorescence. The electrons represent less than one percent of the negative charge at the edge which allowed measuring the ion energy distribution function for both positive and negative ions. Finally, the criterion for sheath formation in electron-free plasmas was investigated.

Prefer Oral Session
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