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Transport in low-temperature magnetized plasma with significant ionization rate LAURENT LIARD, ANE AANESLAND, JEAN-LUC RAIMBAULT, PASCAL CHABERT, Laboratoire de Physique des Plasmas, Ecole Polytechnique, France, STEPHANE MAZOUFFRE, ICARE, CNRS, Orleans, France, PLASMAS FROIDS TEAM, ICARE COLLABORATION — In low-temperature plasma used for microelectronics, the ionization fraction remains sufficiently small (around 10^{-4}) for the neutral density to stay uniform in the reactor. However, with high electronic density reactor, such as helicons or ICP's, the ionization fraction can be significant, reaching 10^{-2}. This fraction may even reach 10 % in plasma thrusters. Theoretical works have shown that when the electronic pressure, $nekBTe$, reaches the same range than the neutral pressure, nnkBTn, a neutral depletion at the center of the discharge occurs. In this poster, experimental study of this phenomenon is presented: Aanesland *et al.* and O'connell *et al.* have measured the ground state density of xenon atoms using TALIF. Their results confirm that the neutral density obtains a minimum at the center of the discharge. Moreover, time resolved measurements of TALIF shows that this phenomenon gathers two different phenomena with their own time scale. Space resolved measurements of the argon metastable temperature have also been performed to estimate the influence of gas heating in neutral depletion, and compared with previous theoretical work.

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