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Electron temperature and plasma density distribution measurement along magnetic barrier in the PEGASES thruster[1] JEROME BREDIN, ANE AANESLAND, PASCAL CHABERT, Laboratoire de Physique des Plasma (LPP), Ecole Polytechnique/CNRS, Route de Saclay, 91128 Palaiseau, France, VALERY GODYAK, RF Plasma Consulting, Brookline, Massachusetts 02446, USA — The basic plasma parameter, electron temperature and plasma density were found as corresponding integrals of the measured EEDF in the PEGASES thruster. The measurements were carried out along the axis and off-axis of the magnetic barrier created with permanent magnets having their magnetic field lines normal to the plasma expansion. The plasma was generated with an induction coil on one end of the thruster, and diffused across magnetic field to the exit of the thruster. The experiments in argon gas were carried out for various parameters of magnetic field (strength, position and gradient). Previously, we showed that the electron temperature can be controlled by the magnetic field, and the degree of the temperature control depends on the gas pressure. In this study we measured the temperature off-axis to understand the influence of the wall conductivity on the electron transport across and along magnetic field. The off-axis probe measurements showed fine structures in the electron temperature and plasma density spatial distributions. A possible mechanism of the structures in the plasma density and the electron temperature distributions are discussed in this presentation.

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