

# The two density peaks in low uniform axial magnetic field helicon plasma

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The single density peak has been commonly found at low axial magnetic field in helicon plasma and generally occurs at around 10-50G. In our experiment, two low-field peaks are observed by the single Langmuir probe and confirmed by the resistance of plasma study, carried by the axial magnetic field from 0G to 200G in argon with Boswell-type antenna at 13.56MHz. The first peak appears at around 30-50G while the second one 100-150G by changing the supply power from 100W to 300W or gas pressure from 0.35Pa to 1.05Pa. Both peaks move to higher magnetic field as the power or pressure increases. The axial integral discharge image is taken by ICCD in order to investigate the discharge variation with low magnetic field. The pictures show that the strong discharge area moves to the edge of discharge tube as the magnetic field increases. Then, the strong discharge area begins to concentrate at the two antenna legs after the magnetic field achieves to the special value the second peak appears at. The total discharge intensity of the ICCD pictures also reflect the same results of density peaks at low magnetic field.