

Abstract Submitted
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Numerical studies of helicon plasmas in the lower hybrid resonance frequency range SUWON CHO, Kyonggi University — In attempt to analyze hollow density profiles observed near the lower hybrid resonance condition, we investigate absorption of the radiofrequency waves and equilibrium profiles of plasma parameters numerically for a helicon discharge with a lower hybrid resonance layer. As the wave approaches the resonance layer, it undergoes heavy damping so that most of the rf power is absorbed outside the resonance layer and the peak absorption occurs near the resonance at a low collision frequency. The strongly localized heating leads to a temperature profile which is different from that of usual discharge at lower magnetic fields. Considering that the collisional energy loss is dominant, the electron temperature is determined from the local power balance. The diffusion equation is used to find the plasma density profile iteratively which is consistent with the temperature and the power deposition profiles.

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