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Presheath and boundary effects on helicon discharge equilibria[1]
CORY JACKSON, University of Wisconsin - Madison, M. UMAIR SIDDIQUI, West Virginia University, JUSTIN KIM, NOAH HERSHKOWITZ, University of Wisconsin - Madison — Two distinct discharge equilibria are observed in a 500 W argon helicon plasma with uniform magnetic fields of 900 G at neutral pressures between 3 and 4 mTorr. Both modes exhibit localized populations of relatively hot electrons. For one discharge equilibria a downstream density peak is observed, similar to observations by other authors [Chen et al., Plasma Sources Sci. Technol. **5**, 173 (1996)]. For the other mode the hot electrons are confined by a localized potential structure and no density peaks are observed. The determination of the discharge mode and the location of the potential structure and hot electron population is modulated by the position of the downstream conducting boundary and the length of its presheath.

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M. Umair Siddiqui
West Virginia University

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