

Abstract Submitted  
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**Progress Towards Spectroscopic Diagnostics of Plasma Parameters and Neutral Dynamics in Helicon Plasmas**<sup>1</sup> JONATHAN GREEN, Univ of Wisconsin, Madison, OLIVER SCHMITZ, University of Wisconsin, Madison, GREG SEVERN, University of San Diego, LARS VAN RUREMONDE, Eindhoven University of Technology, VICTORIA WINTERS, University of Wisconsin, Madison — The MARIA device at the UW-Madison is used primarily to investigate the dynamics and fueling of neutral particles in helicon discharges. A new systematic method is in development to measure key plasma and neutral particle parameters by spectroscopic methods. The setup relies on spectroscopic line ratios for investigating basic plasma parameters and extrapolation to other states using a collisional radiative model. Active pumping using a Nd:YAG pumped dye laser is used to benchmark and correct the underlying atomic data for the collisional radiative model. First results show a matching linear dependence between electron density and laser induced fluorescence on the magnetic field above 500G. This linear dependence agrees with the helicon dispersion relation and implies MARIA can reliably support the helicon mode and support future measurements.

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