Abstract Submitted for the DPP05 Meeting of The American Physical Society

Collisional-radiative modelling of an Ar helicon plasma discharge STUART LOCH, MICHAEL PINDZOLA, DAVID BRANSCOMB, ROBERT BOIVIN, Auburn University, PHYSICS DEPARTMENT, AUBURN UNIVER-SITY, 206 ALLISON LAB, AUBURN, AL 36849-5311 COLLABORATION — We report on recent modelling results of emission observed from a helicon plasma, comparing theoretical and observed line intensities and line ratios of Ar, Ar⁺ and Ar²⁺. Our Helicon plasma is from the ASTRAL device at Auburn University, with spectral measurements from 275 nm through to 1015 nm. We concentrate on the Ar⁺ ion stage, and present the results of a collisional-radiative model using various qualities of atomic data. In particular, we compare the modelling results using Plane-Wave Born, Distorted-Wave and R-matrix electron impact excitation data with those observed from the plasma. As part of the modelling work, we investigate the potential use of various lines as plasma diagnostic tools.

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Date submitted: 22 Jul 2005

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