Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Electron-impact excitation calculations for the argon iso-nuclear sequence[1] S.D. LOCH, C.P. BALLANCE, J.A. LUDLOW, M.S. PINDZOLA, Auburn University — We present results from recent Breit-Pauli R-matrix calculations for the electron-impact excitation of select Argon ions, namely Ar^{3+}, Ar^{4+}, Ar^{5+}, Ar^{7+}, Ar^{8+}, Ar^{10+}, Ar^{11+}, Ar^{12+}, Ar^{13+}, Ar^{14+}, and Ar^{17+}. Together with existing R-matrix calculations this provides a complete excitation dataset for the Argon isonuclear sequence. This project provides a comprehensive set of excitation data for use in current fusion diagnostics, where argon is used to cool the divertor or to mitigate plasma disruptions. The data will also be used in future calculations of generalized collisional-radiative coefficients, for application in plasma transport studies. The R-matrix calculations were done using new developments in the parallel R-matrix codes, allowing the complete iso-nuclear sequence to be calculated relatively quickly. We present results for selected ions, showing a comparison with available excitation cross section measurements, and with other structure and collision strength calculations. We also present some radiative power loss results using the new data. The data is archived as Maxwellian averaged rate coefficients.

[1]This work was supported in part by a grant from the US Department of Energy.

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Date submitted: 25 Jan 2010 Electronic form version 1.4