

R-matrix electron-impact excitation of W^{2+} and W^{6+}

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A progress report of recently published electron-impact excitation and ionization work using the parallel DARC (Dirac Atomic R-matrix Codes) for W^{2+} [1] and W^{6+} [2] shall be given. Electron-impact excitation for doubly ionised Tungsten [1] has been compared with observations taken at the CTH (Compact Toroidal Hybrid) experiment at Auburn University.

Synthetic spectra as a result of Collisional Radiative (CR) modelling reveals good agreement with strong line identification of Lawson et al [3] and simple line ratios suggests lines that may offer temperature and density diagnostics. As we have data sets for both excitation and ionization of W^{2+} , S/XB ratios may be determined, whereas W^{6+} allows comparison with the spectral observations of Lawson et al.[3] from JET and other magnetically confined experiments.

References

- [1] M McCann et al. 2024 *J. Phys. B: At. Mol. Opt. Phys.* **57** 235202
- [2] Niall McElroy et al, *to be submitted*
- [3] K Lawson et al, *Phys. Scr.* **97** (2022) 055605: <https://doi.org/10.1088/1402-4896/ac5eff>