Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Electron Impaction Ionisation from Laser Aligned Magnesium KATE NIXON, ANDREW MURRAY, The University of Manchester, GREGORY ARMSTRONG, JAMES COLGAN, Los Alamos National Laboratories — Very recently, major advances have been made in theoretical predications of electron impact ionisation from molecular targets at low energies [1]. This has been achieved by averaging a number of cross sections, each calculated for a discrete target orientation. The accuracy of the individual cross sections is however still untested. Obtaining experimental data for molecular targets of a known orientation is difficult, and has only been achieved in a few studies for diatomic molecules [2-4]. Atomic targets can also be used to characterise the influence of alignment on the electron impact ionisation. In these studies laser radiation excites an atom to a P state and, more importantly, control the orientation of the electron density within the atom, as demonstrated by Nixon and Murray [5]. New experimental results for magnesium will be presented where the target alignment is varied within the scattering plane. These results will be accompanied by theoretical predictions from new time dependant close coupling (TDCC) calculations.

[1] D Madison, personal communications
[2] M Takahashi et al. 2005 PRL 94 213202
[3] A Senftleben et al. 2010 J. Chem. Phys. 133 1
[4] S Bellm, et al. 2010 PRL 104 023202
[5] KL Nixon and AJ Murray 2011 PRL 106 12320

Kate Nixon
The University of Manchester

Date submitted: 10 Jun 2013 Electronic form version 1.4