

## e-Zn inelastic scattering at 80 eV

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## e-Zn inelastic scattering at 80 eV

M. Piwiński\*<sup>1</sup>, Ł. Klosowski\*, D. Dziczek\*, S. Chwirot\*, D. V. Fursa<sup>†</sup> and I. Bray<sup>†</sup>

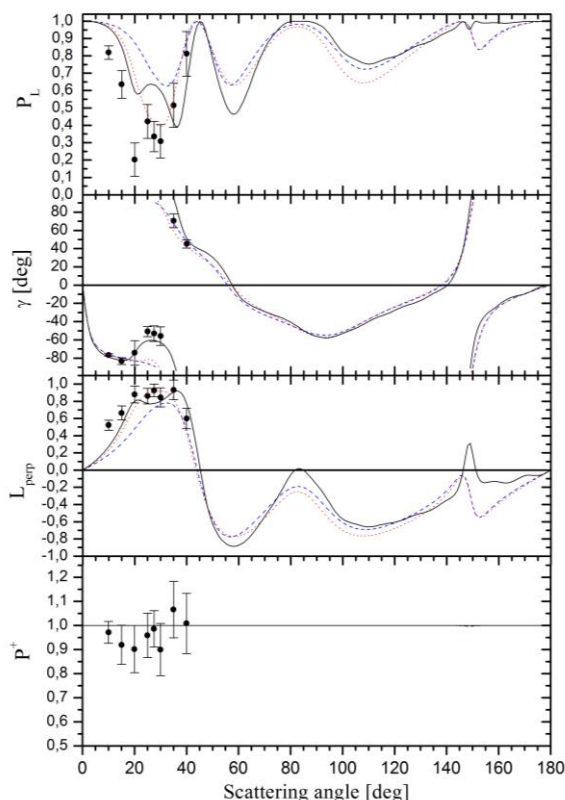
<sup>†\*</sup>Institute of Physics, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University in Toruń, Grudziądzka 5, 87-100 Toruń, Poland

<sup>†</sup>Department of Physics, Astronomy and Medical Radiation Sciences, Curtin University, GPO Box U1987, Perth, WA 6845, Australia

**Synopsis** Stokes and Electron Impact Coherence Parameters (EICPs) for electronic excitation of  $4^1P_1$  state of zinc atoms have been measured for incident electron energy of 80 eV. The experimental data are presented together with Convergent Close Coupling (CCC) theoretical predictions. Our results are compared with recently published Relativistic Distorted-Wave Approximation (RDWA) calculations.

There has been a growing interest in studies of impact excitation of Zn atoms due to possible application of Zn in novel light sources and to a serious discrepancy between theory and experiment for the linear polarization Stokes parameter  $P_2$  determined using spin-polarised electron impact excitation of the  $(3d^{10}4s5s)^3S_1$  Zn state [1-4]. Therefore, it is important, to build up a body of knowledge relevant to electron impact on zinc with aim to test various aspects of the existing theoretical methods.

This work is a continuation of our study on electron-zinc atom collisions [5-7], which is a part of our broader research on He-like atoms: Ca [8, 9], Cd [10-12] and He [13-14]. We present the set of experimental values of Stokes and Electron Impact Coherence Parameters (defined by Andersen *et al.* [15]) for 80 eV incident electron-energy, together with Convergent Close Coupling (CCC) theoretical predictions (for details see Napier *et al.* [16]). Our results are compared with the recently published results of RWDA modelling [17] of the same excitation process (Figure 1).



**Figure 1.** EICP parameters ( $P_L$ ,  $\gamma$ ,  $L_{perp}$ ,  $P^+$ ) for electronic excitation (80 eV) of  $4^1P_1$  Zn state. Experimental data ( $\bullet$ ) are presented together with, (—) CCC, (---) SCR DWA and ( $\cdot \cdot \cdot$ ) MC RDWA theoretical predictions [17].

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<sup>1</sup>E-mail: [Mariusz.Piwiński@fizyka.umk.pl](mailto:Mariusz.Piwiński@fizyka.umk.pl)

