Abstract Submitted
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Light polarization after electron impact excitation of Zinc.[1] K. BARTSCHAT, O. ZATSARINNY, Drake University, D. V. FURSA, I. BRAY, Curtin University, A. N. GRUM-GRZHIMAILO, Moscow State University — There is significant controversy regarding the polarization of the radiation emitted in the $(4s5s)^3S_1 \rightarrow (4s4p)^3P_{0,1,2}$ transitions in Zn after impact excitation by spin-polarized electrons. The recent experimental data of Clayburn and Gay [1] agree well with those of Pravica *et al.* [2] for incident energies above the thresholds for the $(4s5p)^3P_{0,1,2}$ states, which can populate the $(4s5s)^3S_1$ state by cascades. However, there is major disagreement for the linear light polarization P_2 (45°/135°) in the energy region where the state can only be excited directly (by electron exchange). For these energies, Bartschat and Blum [3] predicted P_2 to be zero, in an LS-coupled model that is expected to be accurate for the problem at hand. While the data of [1] support the prediction of [3], the question arises how significant linear polarizations can occur even in the cascade regime, since they require the cascading radiation to be strongly polarized as well. We performed extensive numerical calculations to address this issue. [1] N. B. Clayburn and T. J. Gay, Phys. Rev. Lett. **119** (2017) 093401. [2] L. Pravica *et al.*, Phys. Rev. A **83** (2011) 040701R. [3] K. Bartschat and K. Blum, Z. Phys. A **304** (1982) 85.

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