Abstract Submitted
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Electron scattering from copper[1] OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University — We have extended our recent calculations for electron-impact excitation of the $(3d^9 4s^2)^2D_{5/2,3/2}$ states in copper [1] to elastic scattering as well as other transitions, most importantly the resonance transition $(3d^{10}4s)^2S_{1/2} \rightarrow 3d^{10}4p)^2P_{1/2,3/2}$. In light of the challenges associated with the Cu target, an accurate knowledge of these cross sections is of high interest as a benchmark system for atomic collision theory while at the same time being a key ingredient for modeling applications such as the copper-vapor laser, which has become a well-established source of high-power visible light. Our calculations are based upon Breit-Pauli [2] and fully relativistic [3] versions of the B-spline R-matrix (close-coupling) complex [4]. We will compare our results with those from other recent calculations [5], and also present the relevant atomic structure data, in particular oscillator strenghts for a number of transitions. [1] O. Zatsarinny, K. Bartschat, V. Suvorov, P.J.O. Teubner, and M.J. Brunger, Phys.'Rev. A **81** (2010), in press. [2] O. Zatsarinny and K. Bartschat, J. Phys.'B **37** (2004) 2173. [3] O. Zatsarinny and K. Bartschat, Phys.'Rev. A **77** (2008) 062701. [4] O. Zatsarinny, Comp. Phys.'Commun. **174** (2006) 273. [5] V. Suvorov, P.J.O. Teubner, V. Karaganov, K. Ratnavelu, Y. Zhou, and M.J. Brunger, Phys. Rev. A **80** (2009) 022711.

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