

Abstract Submitted
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B-spline R-matrix with pseudostates calculations for electron-impact excitation and ionization of aluminum¹ OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University, VIKTOR GEDEON, SERGEJ GEDEON, VLADIMIR LAZUR, ELIZABETH NAGY, Uzhgorod State University — A systematic study of angle-integrated cross sections for electron scattering from neutral aluminum is reported. The calculations, carried out with our B-spline R-matrix with Pseudo-States (BSRMPS) method [1,2], cover elastic scattering, ionization, and excitation of the 14 states $(3s^2np)^2P^o$ ($n = 3 - 6$), $(3s^2ns)^2S$ ($n = 4 - 6$), $(3s^2nd)^2D$ ($n = 3, 4$), $(3s3p^2)^{4,2}P$, 2D , 2S , and $(3s^24f)^2F^o$ of aluminum. The sensitivity of the predictions is checked by comparing results obtained in different approximations, including a large-scale model with over 500 continuum pseudostates in the close-coupling expansion. The current results represent an extensive, effectively complete, and highly accurate (believed to be within a few percent) set of electron collision data for neutral aluminum, which is readily suitable for modelling applications.

[1] O. Zatsarinny, *Comp. Phys. Commun.* **174** (2006) 273.

[2] O. Zatsarinny and K. Bartschat, *J. Phys. B* **47** (2014) 061001.

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