Abstract Submitted
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Electron Collisions with Argon at Low and Intermediate Energies[1] OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University — We have further developed the B-Spline R-matrix (BSR) method [1] and the corresponding computer code [2] to allow for a large number of pseudo-states in the close-coupling expansion. In the present work, we carried out semi-relativistic (Breit-Pauli) close-coupling calculations for elastic scattering, excitation, and ionization of argon from both the ground state and the metastable excited states. Coupling to the ionization continuum through the pseudo-states is important for low-energy elastic scattering (to represent polarizability effects), for excitation in the "intermediate" energy regime of about 1-3 times the ionization potential, and to allow for the calculation of ionization processes by transforming the results obtained for excitation of the positive-energy pseudo-states. The current results represent a significant extension of our earlier near-threshold work [3] on the e-Ar collision system. Many of these data are now available in the LXCat database [4].

[1] O. Zatsarinny and K. Bartschat, J. Phys. B **46** (2013) 112001.
[2] O. Zatsarinny, Comp. Phys. Commun. **174** (2006) 273.
[3] O. Zatsarinny and K. Bartschat, J. Phys. B **37** (2004) 4693.
[4] http://www.lxcat.laplace.univ-tlse.fr/database.php

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