

Abstract Submitted
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Evaluation of theoretical cross sections for electron scattering from noble gases for plasma modeling¹ LEANNE PITCHFORD, CNRS and Univ Toulouse, O. ZATSARINNY, K. BARTSCHAT, Drake Univ, USA, D.V. FURSA, I. BRAY, Curtin Univ, Australia, L.L. ALVES, IPFN/IST-UTL, Portugal, S. BIAGI, Univ Liverpool, United Kingdom — Can state-of-the-art theory now provide *complete* sets of cross sections for electron scattering from noble gases suitable for use in Boltzmann calculations of swarm parameters and to the accuracy required for plasma modeling? The answer is a qualified “yes” for He, Ne, and Ar, but “not yet” for Kr and Xe. Purely theoretical cross section sets for electron scattering from these species are presently available on the LXCat website in the BRAY database for He (calculated using the convergent close-coupling technique, formulated in momentum space) and in the BSR database for the other rare gases (obtained with a convergent B-spline R-matrix with pseudo-states method, formulated in coordinated space). Although significant differences occasionally appear in some of the cross sections between experiment and theory, the calculated ionization rate coefficients as a function of reduced electric field strength, E/N , for He, Ne and Ar agree with experiment to within a few percent for the three lighter noble gases.

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