Abstract Submitted
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Comparison of analytical formulae and quantum calculations for differential cross sections in e-Ar[1] J.F.J. JANSSEN, Eindhoven Tech. Univ., O. ZATSARINNY, K. BARTSCHAT, Drake Univ., G.J.M. HAGELAAR, L.C. PITCHFORD, CNRS and Univ. Toulouse — We have previously shown [1] that the fully *ab initio*, quantum mechanical B-spline R-matrix calculations of Zatsarinny and Bartschat for e-Ar cross sections yield accurate values of swarm parameters (transport and rate coefficients vs. reduced electric field strength, for uniform and constant E/N) when used as input in a Boltzmann solver. These comparisons were made by employing the calculated angle-integrated elastic momentum transfer and total inelastic cross sections (usually sufficient for accurate calculations of swarm parameters). The theory, however, also provides fully differential scattering information, which is now available for argon on the open access website LXCat (www.lxcat.net). In this presentation, we compare predictions from several previously proposed analytical formulae for the angular dependence of the cross sections with the quantum predictions. Such comparisons are of interest, for example, in PIC-MC simulations where, due to lack of information, some approximations about the angular dependence must be made and thus the use of analytical formulae is common.

[1] L. Pitchford *et al.*, J. Phys. D **46** (2013) 334001.

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