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Comparisons of sets of electron-neutral scattering cross sections and calculated swarm parameters in N2 and H2 LEANNE PITCHFORD, G.J.M. HAGELAAR, S. PANCHESHNYI, M.C. BORDAGE, LAPLACE, CNRS and Univ Toulouse, France, L.L. ALVES, C.M. FERREIRA, IPFN/IST-UTL Lisbon, Portugal, S.F. BIAGI, Univ Liverpool, UK, Y. ITIKAWA, Inst of Space and Astronautical Sci, Japan, A.V. PHELPS, JILA, NIST and Univ Colorado, USA — The GEC Plasma Data Exchange Project is an informal effort on the part of the low temperature plasma community to organize the collection, evaluation, and distribution of data both for modeling and for interpretation of experiments. In the context of this project, we present a description of the four sets of independently-compiled, electron-neutral scattering cross sections for N2 and for H2 presently available on the open-access LXCat site (www.lxcat.net). These sets are complete in that the main momentum and energy loss processes are taken into account, if we can neglect internal excitation in the gas. Three of these sets were derived using the requirement that they be consistent with available experimental swarm data, and the fourth set consists of recommended values from beam experiments and theory. To assess the validity of each of these cross section sets for use in modeling low temperature plasmas, we calculated electron transport and rate coefficients using these cross sections as input and compared with measured values also available on the LXCat site. We will discuss the influence of rotational temperatures between 77 and 300 K, and we again confirm that a two-term Boltzmann solver yields results in very good agreement with Monte Carlo simulations.

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