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IST-LISBON database with LXCat: Electron scattering cross sections for oxygen and carbon dioxide[1] M GROFULOVIĆ, V GUERRA, P COCHE, LL ALVES, IST/IPFN, University of Lisbon, Lisbon — This work proposes sets of electron scattering cross sections compiled for kinetic energies up to 1 keV, as part of the IST-LISBON database with LXCat, for both molecular and atomic oxygen and for carbon dioxide. The complete and consistent sets of cross sections for O_2, O and CO_2 are validated using the two-term Boltzmann solver embedded in LoKI (LisbOn KInetics) numerical code to calculate swarm parameters, yielding fairly good agreement with the available experimental data. It is evidenced that the inclusion of rotational transitions in O_2 and superelastic collisions with $CO_2(010)$ molecules is essential to reproduce the experimental values of the swarm parameters for $E/N<1$ Td. Further improvement can be achieved by deconvolution of the current vibrational excitation cross sections and/or the inclusion of additional vibrational excitation channels, which would also contribute to improve our knowledge of O_2 and CO_2 plasmas.

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