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Electron Interactions with Excited Atoms and Molecules[1]
STEPHEN BUCKMAN, Centre for Antimatter-Matter Studies, Australian National University — Excited species, particularly those in long-lived metastable states, can have a profound effect on the behaviour of low temperature gas discharges. They often present a considerably different atomic or molecular structure to their ground state "parent" atom or molecule. In the case of rare gas atoms, several of their lowest lying excited states have structures resembling loosely bound, one-electron systems, similar to their nearest alkali neighbor in the periodic table. They have large dipole polarizabilities and, as a consequence, extremely large scattering cross sections for low energy electrons. Combined with their long lifetimes, large internal energy and reasonably high excitation probability, they become an important component of a discharge environment. This talk will review some of the work in studying these important excited states – their role in low temperature discharges was always a fascination for Art Phelps and he was a strong advocate for their detailed study.

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