

Cross Sections and Rate Constants of Resonant Electron Collisions with Molecular Hydrogen and Hydrogen Halides

Karel Houfek, Přemysl Kolorenč, Martin Čížek, and Jiří Horáček

Institute of Theoretical Physics, Charles University in Prague, Czech Republic

Karel.Houfek@mff.cuni.cz

Domain : Low Energy Electron Molecule Interactions

A collection of cross sections and rate constants of resonant collisions of electrons with some diatomic molecules calculated using the most recent nonlocal resonance models [1–5] is now available via anonymous FTP [6] and a new web interface is currently under the construction.

Processes of associative electron detachment, dissociative electron attachment and vibrational excitation of hydrogen halides (HF, DF, HCl, DCl, HBr, DBr, HI and DI) and molecular hydrogen (H₂ and D₂) are included. Data are calculated for many initial rovibrational molecular states at collision energies 0 eV – 4 eV for hydrogen halides and 0 eV – 5 eV for molecular hydrogen.

- [1] M. Čížek, J. Horáček and W. Domcke, J. Phys. B 31, 2571 (1998)
- [2] M. Čížek, J. Horáček, M. Allan, I. I. Fabrikant and W. Domcke, J. Phys. B 36, 2837 (2003)
- [3] M. Čížek, J. Horáček and W. Domcke, Phys. Rev. A 60, 2873 (1999)
- [4] M. Čížek, et al, Phys. Rev. A 63, 062710 (2001)
- [5] J. Horáček, W. Domcke and H. Nakamura, Z. Phys. D 42, 181 (1997)
- [6] ftp://utf.mff.cuni.cz/QMGroup/CS_DBASE/