Vibrationally-resolved electron-molecule scattering

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Full set of vibrationally-resolved electron-impact cross sections and rate coefficients for the processes of dissociative recombination, dissociative attachment, vibrational excitation and dissociative excitation, obteined in the framework of *ab-initio* quantum chemistry methods, will be presented for different molecules and ions [1, 2, 3]. An example is given in Fig. 1 for oxygen molecule. Comparisons with experimental data, where available, will be shown.

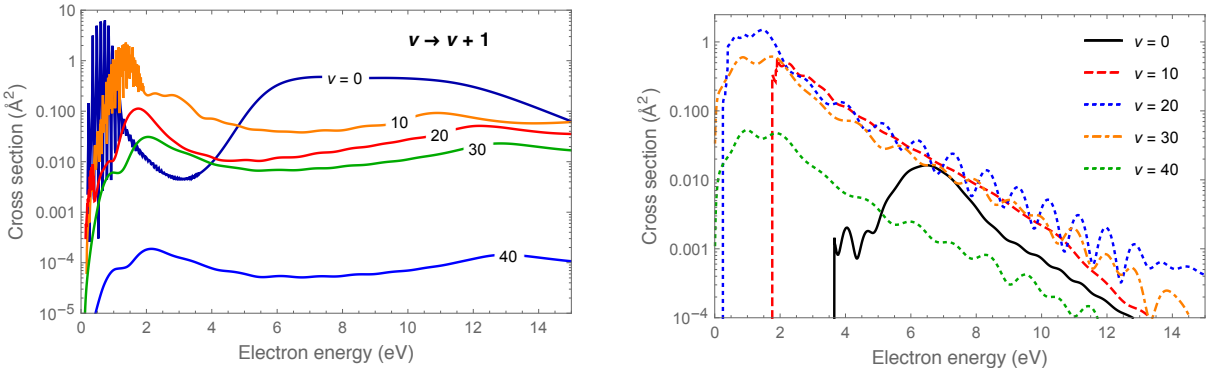

Figure 1: Vibrationally-resolved cross sections for single-quantum vibrational excitation by electron-impact (left side) and dissociative attachment (right side) involving oxygen molecule [4, 5].

State-resolved database of cross sections rapresents the input data in implementing the so-called "state-to-state" kinetic modelling for non-equilibrium plasmas [6, 7].

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