

# REACTIVE COLLISIONS OF ELECTRONS WITH MOLECULAR CATIONS: EFFECTS AND APPLICATION TO $H_2^+$ , $BeD^+$

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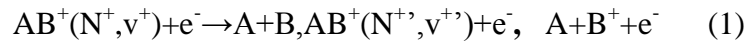
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Dominant elementary processes in numerous cold ionized gases are dissociative recombination (DR), elastic collisions (EC), vibrational excitation (VE) (inelastic collisions), vibrational de-excitation (VdE) (superelastic collisions), and dissociative excitation [1, 2]:



where  $N^+$ /  $v^+$  stand for the rotational/vibrational quantum numbers of the cation.

In this work, using a stepwise method based on Multichannel Quantum Defect Theory (MQDT) [3], cross sections and rate coefficients have been obtained for reactions induced on  $H_2^+$  and  $BeD^+$  [4].

The different mechanisms taken into account for  $H_2^+$ , i.e. direct vs indirect and rotational vs non-rotational processes are presented in this work.

An analytic three-channel model was developed for the description of simultaneous direct and indirect DR cross sections of  $H_3^+$  [5].

For these analyzed systems the results is in good agreement with the CRYRING (Stockholm) and TSR (Heidelberg) *magnetic* storage ring results.

**Keywords:** Dissociative recombination, Multichannel Quantum Defect Theory, rate coefficients.

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