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## Reactive collisions of electrons with molecular cations of astrophysical interest: effects to $H_2^+$ , $HD^+$ , $H_3^+$ (poster pitch)

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The dissociative recombination (DR) together with the competing reactions –ro-vibrational excitation/de-excitation of the hydrogen molecular ion plays a decisive role in astrophysical ionized media: stars and interstellar molecular clouds, early Universe.

Using a stepwise method based on Multichannel Quantum Defect Theory (MQDT) [1], cross sections and rate coefficients have been obtained for reactions induced on  $HD^+$  [2],  $H_2^+$  [3] and  $D_2^+$  [6].

For  $H_2^+$ , the full rotational computations improved considerably, the accuracy of the resulting dissociative recombination cross sections and Maxwell isotropic rate coefficients [5]. The different mechanisms taken into account for  $H_2^+$ , i.e. direct vs indirect and rotational vs non-rotational processes are presented.

An analytic three-channel model was developed for the description of simultaneous direct and indirect DR cross sections of  $H_3^+$  [4].

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

### References:

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