

# Dissociative recombination and excitation in $\text{H}_2^+$ , $\text{HD}^+$ and $\text{BeH}^+$

**K. Chakrabarti**

**ICTP, January 24, 2012**



- $H_2^+$ ,  $HD^+$  and  $BeH^+$  are occur in fusion plasmas.

- $H_2^+$ ,  $HD^+$  and  $BeH^+$  are occur in fusion plasmas.
- DR and DE data on these molecules can be useful for fusion devices, ITER etc..

- $H_2^+$ ,  $HD^+$  and  $BeH^+$  are occur in fusion plasmas.
- DR and DE data on these molecules can be useful for fusion devices, ITER etc..
- $H_2^+$ ,  $HD^+$  occur in stellar atmospheres and hence DR and DE data are also in astrophysics.



- We use the MQDT to calculate DR and DE cross sections.

- We use the MQDT to calculate DR and DE cross sections.
- We focus on the high energy region where the incident electron energy is  $> 3.0$  eV.

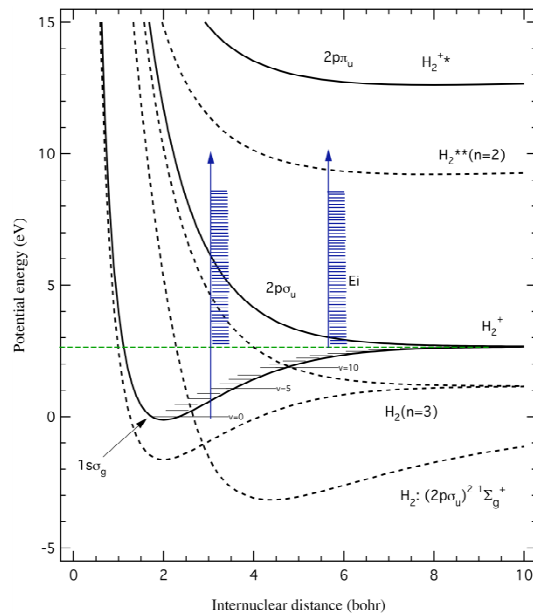


- We use the MQDT to calculate DR and DE cross sections.
- We focus on the high energy region where the incident electron energy is  $> 3.0$  eV.
- Here DR is influenced by DE which is a competing process.

- We use the MQDT to calculate DR and DE cross sections.
- We focus on the high energy region where the incident electron energy is  $> 3.0$  eV.
- Here DR is influenced by DE which is a competing process.
- We take into account both DE1 and DE2.

## Dissociative Excitations: Type 1 and 2

Fig. 1. Potential energy curves of  $H_2$ .



DE1: Excitation of the molecular ion from an initial vibrational state  $v_0^+$  to the continuum.

DE2: Excitation of the molecular ion from an initial vibrational state  $v_0^+$  to a **repulsive excited state** of the ion.



- DR and DE work on  $H_2^+$  and  $HD^+$  complete.

- DR and DE work on  $\text{H}_2^+$  and  $\text{HD}^+$  complete.
- DR and DE work on  $\text{BeH}^+$  underway.

- DR and DE work on  $H_2^+$  and  $HD^+$  complete.
- DR and DE work on  $BeH^+$  underway.

**Much more on the Poster....**

- DR and DE work on  $H_2^+$  and  $HD^+$  complete.
- DR and DE work on  $BeH^+$  underway.

Much more on the Poster....

*Thank You*