

# Effect of a triplet to singlet state interaction on photofragmentation dynamics: Highly excited states of HBr probed by VMI and REMPI as a case study

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## Supporting information

### Content:

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- Fig. S1**, Mass resolved REMPI spectra ( $\text{H}^{79}\text{Br}^+$ ,  $^{79}\text{Br}^+$ ,  $\text{H}^{81}\text{Br}^+$ ,  $^{81}\text{Br}^+$  and  $\text{H}^+$ ) covering spectra due to two-photon resonance excitations to the  $6p\pi^3\Sigma^-(0^+, v'=0)$  ( $Q$  lines and the  $J'=0$  and  $2$  lines for the  $O$  and  $S$  series, respectively) and  $V^1\Sigma^+(v'=m+17)$  ( $Q$  lines,  $J'=7$  and  $8$  only) states ( $84\,740 - 84\,860\text{ cm}^{-1}$ ). Bromine atomic ( $2+1$ ) REMPI lines are marked by asterisks (\*). Lines due to the two isotopologues  $\text{H}^{79}\text{Br}$  and  $\text{H}^{81}\text{Br}$  in the  $V$  state spectrum are marked by broken red ( $i=79$ ) and blue ( $i=81$ ) lines respectively..... 2
- Fig. S2**, Rotational energy levels derived from observed REMPI rotational peaks for the  $6p\pi^3\Sigma^-(v'=0)$  (blue) and the  $V^1\Sigma^+(v'=m+17)$  (red) states ( $\text{H}^{79}\text{Br}$ ) along with estimated potential curves (blue solid curve and red dotted curve respectively). Near-resonance interactions for  $J'=7$  and  $8$  are indicated by black broken lines. The potential curve for the  $6p\pi$  state is based on that of the ground ionic state<sup>1</sup> (see Fig. caption 1b), whereas the diabatic curve for the  $V$  state is extrapolated from the  $V$  part of the adiabatic  $B$  potential (see Fig. 1b). The method of calculating the rotational energy levels is described in reference<sup>2</sup> ..... 2

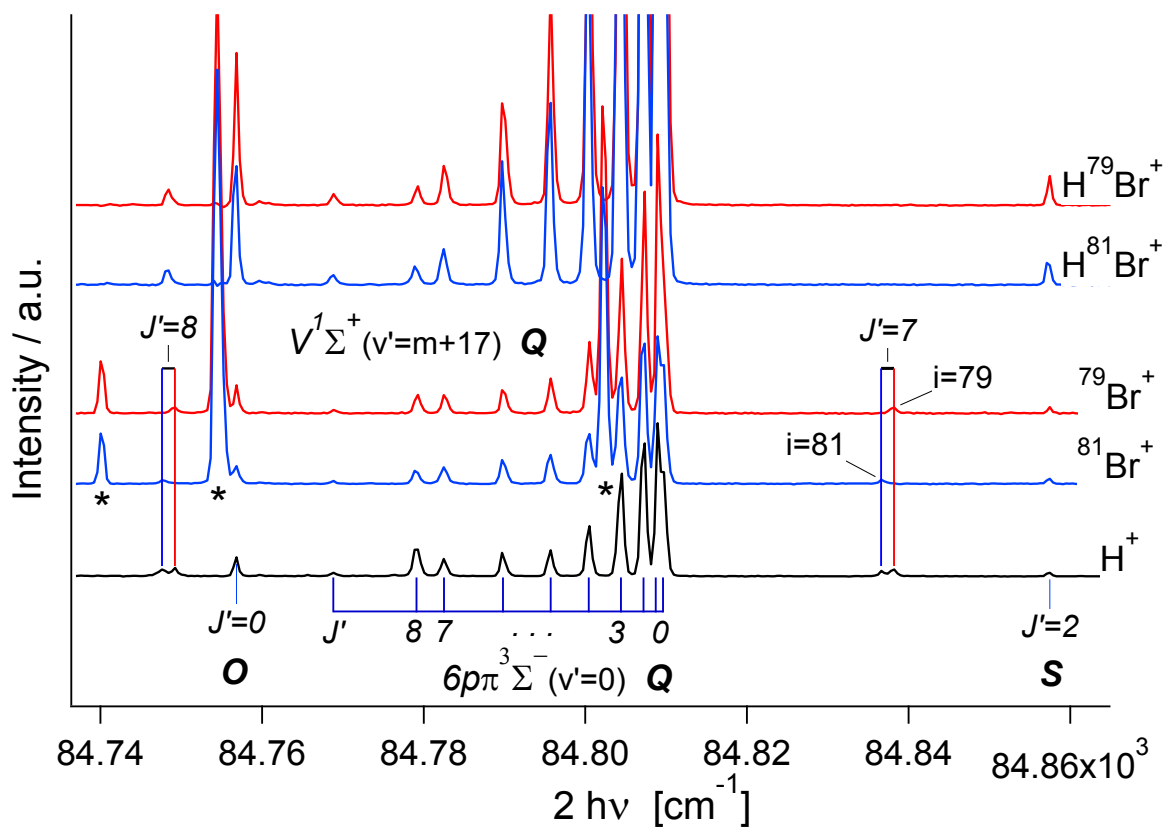


Fig. S1

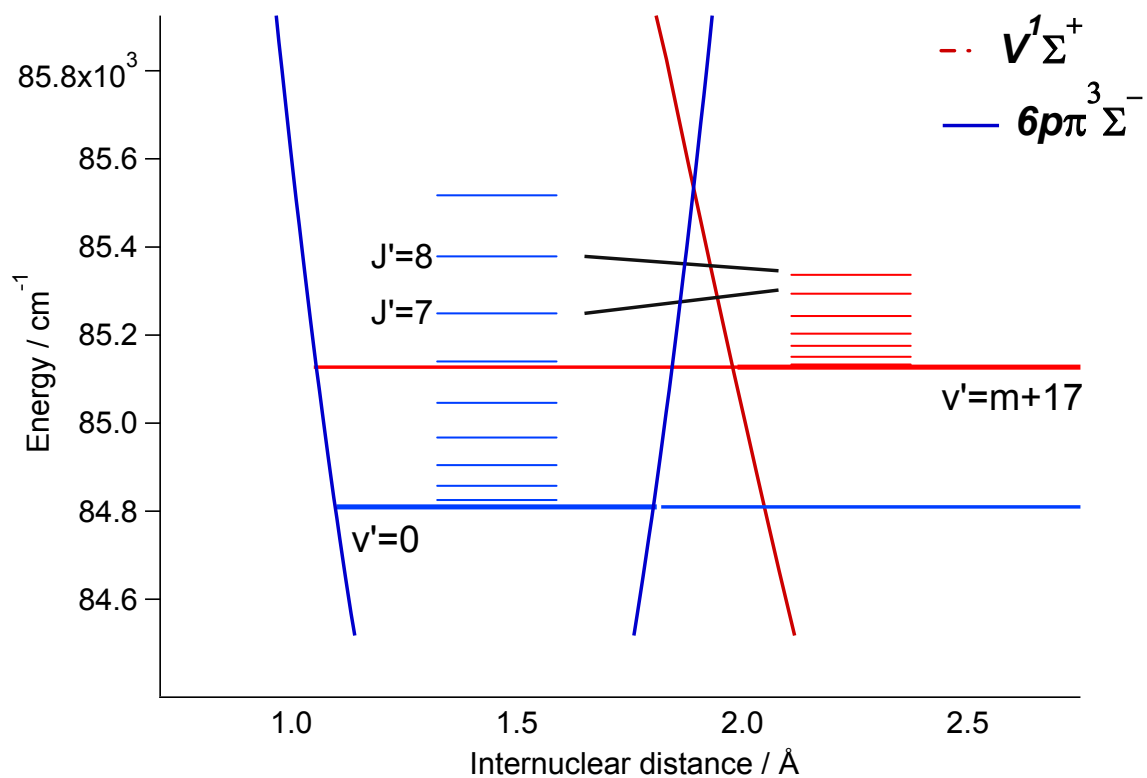


Fig. S2

## References

1. A. Banichevich, R. Klotz and S. D. Peyerimhoff, *Molecular Physics*, 1992, **75**, 173-188.
2. Á. Logadóttir, Á. Kvaran and H. Wang, *J. Chem. Phys.*, 2000, **112**, 10811-10820.