DYNAMICS OF THRESHOLD PHOTO-ION PAIR PRODUCTION IN SMALL MOLECULES

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It has already been demonstrated that the method of threshold ion-pair production spectroscopy (TIPPS) can be used to probe the energetics of molecular dissociation with spectroscopic accuracy. Since TIPPS produces a spectrum which measures energy differences between the starting neutral molecule states and the states of the ion-pair dissociation products, it can also be used to determine the spectroscopy of the ion fragments, and the dynamics of the ion-pair dissociation. The results of TIPPS experiments on the following dissociations will be used to illustrate these features of TIPPS:

$H_2S + h\nu \rightarrow H^+ + SH^-$

$H_2S + h\nu \rightarrow H^- + SH^+$

$HCN + h\nu \rightarrow H^+ + CN^-$

Our results on these systems indicate that, as with neutral photodissociation, an initial state of the neutral can be coupled to a wide range of product states, meaning that the spectroscopy of highly excited ions can be studied by TIPPS.