PREDISSOCIATION DYNAMICS OF THE $A^3\Sigma^+$ STATE OF THE SH RADICAL

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Velocity map imaging of the $S(^3P_{J=0,1,2})$ fragments from the predissociation of selected ro-vibrational levels of the $A^3\Sigma^+$ state of SH has been used to determine photofragment recoil anisotropies, branching into spin-orbit levels, and the electronic angular momentum polarization of the S atoms. The photofragment recoil anisotropies will be compared with predictions from a model by Houston and coworkers\textsuperscript{a} that accounts for the effects of excited state lifetimes. These vibrational and rotational level dependent lifetimes were previously measured by cavity ring-down spectroscopy and modelled using Fermi Golden rule calculations.\textsuperscript{b} The spin-orbit level branching and populations of $m_J$ states, derived from the angular momentum polarization measurements, depend on the correlation of the repulsive states responsible for the $A^3\Sigma^+$ state predissociation to the asymptotic $H(^3S_{1/2}) + S(^3P_J)$ limits and non-adiabatic dynamics during the fragmentation.