NON-ADIABATIC PROCESSES IN THE PHOTODISSOCIATION OF QUARTET STATE Na_3 AND K_3

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Excitation of both the $2^4E' \leftarrow 1^4A_2'$ transition of Na_3 and the $1^4A_2'' \leftarrow 1^4A_2'$ transition of K_3 lead to curve-crossings into a predissociative doublet state as evidenced by the presence of atomic ($P \rightarrow S$) and singlet dimer $B \rightarrow X$ fluorescing products. Single photon counting techniques have been employed to measure the intersystem crossing times in these simple systems by measuring the onset times of product fluorescence as a function of the vibrational state of the upper quartet state. We find that the spin-orbit mediated intersystem crossing occurs as expected more rapidly for K_3 than for Na_3 while, for the latter system, the rapidity of the process increases as we move to higher vibronically excited states.