Abstract Submitted
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Spectroscopy of ^{39}K^{85}Rb electronic states in the predicted region of resonantly coupled excited states for the direct formation of the X(0,0) state[1] JAYITA BANERJEE, DAVID RAHMLOW, RYAN CAROLLO, MICHAEL BELLOS, MATTHEW BERMUDEZ, EDWARD EYLER, PHILIP GOULD, WILLIAM STWALLEY, Department of Physics, University of Connecticut — The $2^1\Pi$(v$\prime$=17) and $1^1\Pi$(v$\prime$=60) vibrational levels of KRb are predicted to be resonantly coupled, based on extrapolation from high rotational levels reported in [1] to $J\prime$ =1 [2], and on tentative assignments of photoassociation spectra in the region near 12535cm^{-1} [3]. Access to the $2^1\Pi$ levels is desirable for formation of ultracold KRb molecules in their ground $X^1\Sigma^+$, v=0, J=0 level because of strong Franck-Condon overlap [3]. The $1^1\Pi$ component of these two mixed states provides PA access to short range region where $2^1\Pi$ emission to the X(0,0) level can occur. Experiments are being carried out to better understand the spectra and perturbations in the region near 12535cm^{-1}, which should include 3(0^+), 2(1), 4(1), 5(1) and possibly other states. The 4(1) and 5(1) long-range states correlate with $1^1\Pi$ and $2^1\Pi$ short-range states. These studies have also produced new information on efficient formation of specific vibrational levels in $a^3\Sigma^+$ state and new data on $3^3\Sigma^+$and $3^3\Pi$ states.

[1] Kasahara et al., JCP 111, 19 (1999)
[2] Wang et al, EPJD 31, 165 (2004)
[3] Stwalley et al., JPCA 114, 81 (2010)

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