Abstract Submitted
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Collisional Orientation Transfer Facilitated Polarization Spectroscopy[1] J. BAI, E. AHMED, B. BESER, Y. GUAN, M. LYYRA, Temple Univ., S. ASHMAN, C. WOLFE, J. HUENNEKENS, Lehigh Univ. — We report extensive collisional orientation transfer in V-type double-resonance polarization spectroscopy of the $A^1\Sigma_u^+ \sim b^3\Pi_u$ complex of $Rb_2$and Cs_2. Using this technique, in the Cs_2 case, we were able to observe a gap region in the A∼b complex with poor Franck Condon factors (FCF) with the ground state. Since spectral congestion makes it difficult to find isolated pump transitions for a heavy molecule such as Cs_2, this technique allows us to observe many more rotational levels for each vibrational level than the customary strong $\Delta J = \pm 1$ transitions. For probe transitions with very small FCF values we were able to observe angular momentum change with $\Delta J_{max} = 12$, while in an analogous study of the Rb_2 A ∼ b complex of states, for transitions with larger FCF values, the maximum observed angular momentum change of the collisional satellite lines was $\Delta J_{max} = 58$. Although collisional satellites lines were observed in polarization spectroscopy previously at a much higher pressure of several hundred Torr, our experiments were done at 1 Torr pressure without any loss in resolution.

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