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Collisional molecular orientation transfer in polarization spectra of the $A^1\Sigma_u^+$state of $^{85}Rb_2$ and Cs_2 dimers[1] JIANMEI BAI, BEDIHA BESER, ERGIN AHMED, YAFEI GUAN, Temple University, CHRISTOPHER WOLFE, SETH ASHMAN, JOHN HUENNEKENS, Lehigh University, MARJATTA LYYRA, Temple University — There is significant interest in the lowest excited states of the heavy alkali dimers since they serve as intermediaries in the excitation to higher levels and in the production of ultracold ground state molecules. We have observed a large number of rovibrational levels of the A-b complex in $^{85}Rb_2$ and Cs_2 using V-type optical-optical double-resonance polarization spectroscopy with a circularly polarized pump laser and a linearly polarized separate probe laser. In addition to the R, Pdoublets, expected from a single pump laser lower level, we have observed orientation transfer based probe laser signals from a large number of collisionally populated rotational levels. Despite the complex collisional processes occurring in the system, satellite lines with significant difference in the rotational quantum number from the main lines (up to $\Delta J = 52$ in $^{85}Rb_2$) are present in the recorded spectra. The measurements were performed using a heatpipe oven.

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