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Observation of the $^{85}Rb_2$ a $^3\Sigma_u^+$ State by PFOODR Resolved Fluorescence Spectroscopy[1] BEDIHA BESER, JIANMEI BAI, ERGIN AHMED, Department of Physics, Temple University, VLADIMIR SOVKOV, VALERY IVANOV, Fock Institute of Physics, St. Petersburg State University, FENG XIE, Department of Physics, Tsinghua University, LI LI, MARJATTA LYYRA, Department of Physics, Tsinghua University — Perturbation Facilitated Optical Optical Double Resonance (PFOODR) resolved fluorescence from a single rovibronic level of an excited triplet state ($^3\Pi_g$ or $^3\Sigma_g^+$) was used to characterize the a $^3\Sigma_u^+$ ground triplet state of $^{85}Rb_2$. A thermal Rubidium heatpipe source was used with a Titanium Sapphire pump laser and with a Toptika DL100 diode laser as the probe. The two color excitation was performed using an intermediate level with mixed singlet-triplet character belonging to the $A\ ^1\Sigma_u^+ \sim b\ ^3\Pi_u$ system. We have recorded resolved fluorescence from the PFOODR upper level to the a $^3\Sigma_u^+$ state using a combination of a SPEX 1404 double monochromator (resolution $\sim$0.2cm^{-1}) and a DA8 BOMEM FTIR (resolution $\sim$0.015cm^{-1}) interferometer. The multi-parameter Morse Long Range potential method was used to analyze the observed bound-bound and bound-free components of the spectra to construct the $a^3\Sigma_u^+$ potential curve.

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