

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

New Data and Analysis of Available Data on the $A^1\Sigma_u^+$ and $b^3\Pi_{0u^+}$ States of Rb_2 ¹ T. BERGEMAN, H. SALAMI, SUNY Stony Brook, A.J. ROSS, P. CROZET, A. ALLOUCHE, M. AUBERT-FRÉCON, U. Lyon 1, France, B. BESER, J. BAI, A.M. LYYRA, S. KOTOCHIGOVA, Temple U., C. LISDAT, U. Hannover, Germany, O. DULIEU, Lab. Aime Cotton, U. Paris-Sud, Orsay, France — The lowest excited states of alkali dimers are of interest as intermediaries in the excitation of higher levels and in the production of ultracold ground state molecules. With help of new data, particularly on low vibrational levels of the A state, and improved *ab initio* estimates of potentials and spin-orbit functions, we have produced an improved fit to available data on the A and b states of Rb_2 . Currently, the rms residual of our fit is 0.22 cm^{-1} , as compared with experimental uncertainties of 0.003 to 0.008 cm^{-1} . This suggests that the primary structures are reproduced in the model, but there remains some deficiency, perhaps in the form of the spin-orbit coupling function, or associated with insufficient data on the $b^3\Pi_{0u^+}$ state.

¹Work at Stony Brook supported by NSF grant PHY0652459, at Temple by NSF grant PHY055608.

T. Bergeman
SUNY Stony Brook

Date submitted: 01 Feb 2008

Electronic form version 1.4