

Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Singlet-Triplet Mixing and Ground-State Molecule Formation in Ultracold Rb₂¹ YE HUANG, DAJUN WANG, HYEWON PECHKIS, JIANBING QI², COURT ASHBAUGH, EDWARD EYLER, PHILLIP GOULD, WILLIAM STWALLEY, University of Connecticut — We have observed two manifestations of singlet-triplet mixing in ultracold Rb₂. In the first, we start with high- v levels of the $X^1\Sigma_g^+$ state which are produced by photoassociation and detected by REMPI. Scanning the detection laser reveals transitions to the $2^3\Pi_u$ state. In the second case, we start with $a^3\Sigma_u^+$ molecules and observe transitions to $3^1\Sigma_g^+$. We propose a scheme for producing $X^1\Sigma_g^+(v=0)$, starting with $a^3\Sigma_u^+$ molecules in high- v : $a^3\Sigma_u^+ \rightarrow 3^1\Sigma_g^+ \rightarrow A^1\Sigma_u^+ \rightarrow X^1\Sigma_g^+$. The first step is made possible by the admixture of triplet character in the $3^1\Sigma_g^+$ state.

¹Supported by NSF

²Present address: Penn State Berks Lehigh-Valley College, USA

Ye Huang
University of Connecticut

Date submitted: 26 Jan 2006

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