

Abstract Submitted
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Progress towards forming ultracold $^{85}\text{Rb}_2$ molecules in an optical trap H.K. PECHKIS, M. BELLOS, J. RAYMAJUMDER, R. CAROLLO, E.E. EYLER, P.L. GOULD, W.C. STWALLEY, Physics Department, Univ. of Connecticut — We are completing construction of an apparatus for efficiently producing ultracold Rb_2 molecules in a quasi electro-static optical trap (QUEST) by photoassociation (PA). The QUEST is loaded from a magneto-optical trap (MOT), with additional cooling and compression stages to optimize the density and temperature. The trapped atom cloud is detected by absorption imaging. Molecules will be formed from the optically trapped atoms by PA to levels bound by $\simeq 1\text{-}100\text{ cm}^{-1}$, followed by radiative decay. Employing the QUEST will allow optical trapping of Rb_2 in the singlet $X^1\Sigma_g^+$ state, as well as enhancing greatly the PA rates for forming these ultracold molecules. We will present in more detail our progress in experimentally forming ultracold molecules in the dipole trap and progress toward experiments on collisions involving the trapped molecules. This work is supported by National Science Foundation.

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