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Photoassociative Spectroscopy of the (2)$^3\Pi$ State in RbCs COLIN BRUZEWICZ, MATTIAS GUSTAVSSON, TOSHIHIKO SHIMASAKI, DAVID DEMILLE, Yale University — We photoassociate RbCs molecules into several deeply-bound vibrational levels of the $\Omega = 0^+$ and $\Omega = 0^-$ components of the $(2)^3\Pi$ state. These include both previously observed and newly discovered levels. We measure the photoassociation laser intensity dependence of ground state molecule production for these levels and compare the saturation behavior to theoretical predictions. Using RKR analysis of the relevant molecular potentials, we have predicted and located a photoassociation state ($(2)^3\Pi_0$, $v = 10$, $J = 1$) that decays favorably to the $v = 0$ vibrational level of the ground $X^1\Sigma^+$ state. This presents a promising pathway to the production of large numbers of rovibrational ground state polar molecules.

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