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Photoassociation of Fermionic ^{87}Sr via the $^1S_0$ - $^1P_1$ Transition JOSHUA HILL, JAMES AMAN, THOMAS KILLIAN, Rice University — The fermionic isotope of strontium, ^{87}Sr, is of interest for the development of optical frequency standards and the study of quantum many-body phenomena. In many of these experiments, ^{87}Sr is confined in an optical lattice. Detecting the presence of doubly occupied lattice sites is a valuable tool for studies of atomic gases in optical lattices, and this is typically done with photoassociation, in which two gound-state atoms in a scattering state are photo-excited to a molecular state. No resonance frequencies have been reported for transitions to molecular states of any excited electronic potential for ^{87}Sr. Here we present results for photoassociation of ^{87}Sr atoms via the $^1S_0$ - $^1P_1$ transition at 461nm ($\Gamma = (2\pi * 30.5)s^{-1}$), and measurements of optical lengths for select photoassociation spectra.

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