

Abstract Submitted
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Photoassociation of ^{171}Yb atoms¹ IRIS REICHENBACH, IVAN DEUTSCH, University of New Mexico — Photoassociation on the extremely narrow $^1S_0 \rightarrow ^1P_0$ clock transition of fermionic alkaline-earth like elements allows for both the accurate examination of molecular states at large separation, and the manipulation of scattering properties via optical Feshbach resonances. The latter open new avenues to the control of ultracold atomic collisions by fine-tuning the scattering properties of the colliding atoms. We calculate the long-range molecular potentials of ^{171}Yb that dissociate to $^1S_0 + ^1P_0$ for use in photoassociation, including hyperfine interactions and external magnetic fields. We investigate the existence of purely long-range bound states, caused by anticrossings induced by the hyperfine interaction, as well as shape resonances in the scattering eigenstates.

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