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**Optical Feshbach Resonances in Alkaline Earth Atoms** T.L. NICHOLSON, JILA and University of Colorado, S. BLATT, G.K. CAMPBELL, B.J. BLOOM, J.W. THOMSEN, J. YE, University of Colorado — Recent proposals have shown that a quantum degenerate gas of alkaline earth atoms can be used for a number of novel quantum computing and quantum simulation experiments. Strontium is a good candidate for such experiments because it can be controlled with high precision, as demonstrated in recent atomic clock experiments. Unfortunately, the small scattering length of strontium is not amenable to evaporative cooling techniques that are used to reach quantum degeneracy. Furthermore, increasing the scattering length of alkaline earths with a magnetic Feshbach resonance is not possible due to their spinless electronic ground state configuration. However, recent theoretical and experimental work suggests the possibility of changing scattering lengths in alkaline earths with laser light. Using this optical Feshbach resonance near strontium's narrow ${}^1S_0 \rightarrow {}^3P_1$ intercombination transition might allow its scattering length to be controlled without significant atom loss. We report our recent progress in demonstrating an optical Feshbach resonance in strontium 88.

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