

Abstract Submitted
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Resolved Sideband Spectroscopy and Cooling of Strontium in a 532-nm Optical Lattice¹ JAMES AMAN, JOSHUA HILL, T. C. KILLIAN, Rice Univ — Resolved sideband cooling is a powerful and well established technique for driving ultracold atoms in optical lattices to the motional ground state of individual lattice sites. Here we present spectroscopy of the narrow $5s^2\ ^1S_0 \rightarrow 5s5p\ ^3P_1$ transition for neutral strontium-84 in a 532nm optical lattice. Resolved red- and blue-detuned sidebands are observed corresponding to changes in the motional state in the lattice sites. Driving the red sideband, we demonstrate cooling into the ground state, which increases the initial phase-space density before forced evaporative cooling. This is a promising technique for improving the production of strontium quantum degenerate gases.

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James Aman
Rice Univ

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