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Producing Quantum Degenerate Gases of Strontium¹ FRANCISCO CAMARGO, ROGER DING, JOSEPH WHALEN, GERMANO WOEHL, BARRY DUNNING, THOMAS KILLIAN, Rice University — We present our progress towards producing quantum degenerate gases of all four stable isotopes of strontium (^{84}Sr , ^{86}Sr , ^{87}Sr , ^{88}Sr) and isotopic mixtures. We characterize the performance of our broad-line (461 nm, 30.5 MHz), narrow-line (689 nm, 7.5 kHz) magneto-optical traps, and examine evaporative cooling for all four isotopes. The new apparatus will be used to create and study tunable long-range interactions by dressing with strongly-interacting Rydberg states. The ability to trap the four different isotopes allows a measure of control of these interactions through access to a range of attractive and repulsive interactions. Simultaneous trapping of different isotopes provides opportunities for novel laser cooling schemes for studying Bose-Bose and Bose-Fermi mixtures.

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