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Photoassociation and Isotope shift spectroscopy with ultracold Strontium ANANYA SITARAM, BENJAMIN RESCHOVSKY, NEAL PISENTI, HIROKAZU MIYAKE, PETER ELGEE, NICHOLAS MENNONA, GRETCHEN CAMPBELL, University of Maryland, College Park — Strontium makes an excellent candidate for studies in precision measurement and quantum simulation because of its ultra-narrow line used in atomic clocks and its many stable isotopes. We will present our recent measurement of photoassociation resonances near the $^1S_0$-$^3P_1$ intercombination line, as well as a recent measurement of the isotope shifts for both the $^1S_0$-$^3P_1$ and $^1S_0$-$^3P_0$ lines. For the photoassociation measurement, we have investigated the mass-scaling behavior of resonances relative to the $^3P_1$ state in bosonic strontium and measured a number of bound states for ^{84}Sr and ^{86}Sr. Isotope shifts were measured between all stable isotopes of strontium relative to ^{88}Sr, allowing for a King Plot analysis. Finally, we will report on progress made in building a new ultracold strontium experiment. Improvements include implementing a Bitter coil design for the MOT, allowing us to achieve moderately high magnetic fields with easy and effective water cooling, and a newly designed vacuum chamber.

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