Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Strontium atom arrays: toward Rydberg entanglement and optical qubit control[1] IVAYLO MADJAROV, JACOB COVEY, ALEXANDRE COOPER, ADAM SHAW, Caltech, VLADIMIR SCHKOLNIK, JPL, RYAN WHITE, Caltech, JASON WILLIAMS, JPL, MANUEL ENDRES, Caltech — Recent work on high-fidelity and low-loss imaging of single strontium atoms has opened the door to assembly and readout of defect-free strontium arrays. We present the results of this work, as well as progress toward Rydberg-mediated entanglement. Strontium has several potential advantages for high-fidelity entanglement. One such advantage is its metastable and optically-resolved clock state, which can be used as a high-lying ground state for single-photon Rydberg excitation. We further discuss progress toward an optical qubit realized by coherent driving of the clock transition, and the potential for qubit entanglement via Rydberg dressing.

[1]NSF CAREER, Sloan Foundation, NASA/JPL, Fred Blum

Ivaylo Madjarov
Caltech

Date submitted: 01 Feb 2019 Electronic form version 1.4