Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Toward Rydberg entanglement and optical qubit control in strontium atom arrays[1] ADAM SHAW, ALEXANDRE COOPER, IVAYLO MADJAROV, JACOB COVEY, RYAN WHITE, Caltech, VLADIMIR SCHKOLNIK, JASON WILLIAMS, JPL, MANUEL ENDRES, Caltech — We present recent results in high-fidelity and low-loss imaging of single strontium atoms in optical tweezers, as well as progress toward Rydberg-mediated entanglement in defect-free arrays. The strontium clock state is metastable and optically resolvable, allowing for its use as both a stage for single-photon Rydberg excitation and as a basis state in an optical qubit realized via coherent driving of the clock transition. We discuss progress toward both avenues, as well as the potential for optical qubits interacting 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