

# Microscopically-controlled arrays of alkaline-earth atoms

*Sunday, 10 September 2023 09:20 (35 minutes)*

Optical tweezer trapping of neutral atom arrays has been a rapidly progressing platform for quantum information science, enabling control and detection of 100s of individual atomic qubits, and incorporation of different kinds of interactions. While pioneering work focused on alkali species, there has been recent exploration of a new type of atom - alkaline-earth(-like) atoms - for optical tweezer trapping. While their increased complexity leads to challenges, alkaline-earth atoms offer new scientific opportunities by virtue of their rich internal degrees of freedom. I will report on how features of these atoms can cooperate with tweezer-based single-particle control to impact areas ranging from quantum information processing, to quantum metrology, and quantum simulation.

**Primary author:** Prof. KAUFMAN, Adam (JILA, CU, NIST)

**Presenter:** Prof. KAUFMAN, Adam (JILA, CU, NIST)

**Session Classification:** Optical tweezers I

**Track Classification:** Long-range Interactions and Rydberg Systems