

Abstract Submitted
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Ion-trapping lab setup for quantum information experiments

ALEXANDER QUINN, JEREMY METZNER, DANIEL MOORE, VIKRAM SANDHU, DAVE WINELAND, DAVID ALLCOCK, Univ of Oregon — The Allcock group at the University of Oregon is in the process of setting up a new ion trap lab. The broad purpose of our setup is to trap $+Ca43$ ions and use them for quantum information experiments. We are currently building and integrating: a macroscopic, linear Paul trap that will operate at room temperature; an ultra-high vacuum system; and a compact, rack-mounted laser system for ion cooling, state preparation, state readout, and logic gates. The apparatus includes an imaging system for collecting light from trapped ions for either counting photons or imaging individual ions, and a control system, based on ARTIQ hardware, gateway, and software, for managing and analyzing experiments.

Alexander Quinn
Univ of Oregon

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