

Abstract Submitted  
for the DAMOP18 Meeting of  
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**Exploring nonequilibrium quantum phenomena with ultracold lithium**<sup>1</sup> KURT FUJIWARA, KEVIN SINGH, ZACHARY GEIGER, MIKHAIL LIPATOV, ETHAN SIMMONS, DAVID WELD, Univ of California - Santa Barbara — Ultracold lithium atoms in optical lattices provide a versatile platform for investigation of non-equilibrium quantum systems. We report on the first dynamical realization of a relativistic harmonic oscillator, on experimental characterization of a Floquet phase diagram in a strongly-driven optical lattice, on the first experimental measurement of position-space center-of-mass Bloch oscillations, and on the observation of large-scale coherent transport in hybridized Floquet-Bloch bands.

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Kurt Fujiwara  
Univ of California - Santa Barbara

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