

Abstract Submitted
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The driven-dissipative Jaynes-Cummings lattice in the nonlinear dispersive regime ANDY C. Y. LI, Northwestern University, MATTIAS FITZPATRICK, NEEREJA SUNDARESAN, ANDREW HOUCK, Princeton University, JENS KOCH, Northwestern University — Experiments studying circuit-QED lattices have great potential for advancing our understanding of nonequilibrium many-body phenomena, including dissipative and dynamical phase transitions. One particular model realizable in this architecture is the driven-dissipative Jaynes-Cummings lattice. Motivated by the experimental measurements in the Houck lab, we theoretically investigate the dispersive regime including sub-leading nonlinear contributions from Kerr terms, employing a semi-classical approximation and numerics based on the quantum master equation. We explore the features of the experimentally detected crossover which is observed for an increase of the driving strength beyond a certain threshold.

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