Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Phase Diagram of a driven-dissipative Bose-Hubbard model ALEXANDRE LE BOITÉ, GIULIANO ORSO, CRISTIANO CIUTI, Laboratoire MPQ, Université Paris Diderot-Paris 7 and CNRS — In recent years, quantum fluids of light in nonlinear optical systems have attracted a lot of interest [1]. In particular, a considerable activity is presently devoted to non-equilibrium many-body phenomena with light, such as superfluid propagation and generation of topological excitations. We present here recent theoretical results on strongly correlated photons in arrays of nonlinear cavities, described by a driven-dissipative Bose-Hubbard model. We have determined the mean-field phase diagram, studied the collective excitations and quantum correlations [2], finding interesting properties which are absent in the equilibrium case.

[1] I. Carusotto and C. Ciuti, Rev. Mod. Phys. (in press, 2012), arXiv:1205.6500.
[2] A. Le Boité, G. Orso, C. Ciuti, in preparation.

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Date submitted: 26 Nov 2012 Electronic form version 1.4