

MAR17-2016-020409

Abstract for an Invited Paper
for the MAR17 Meeting of
the American Physical Society

Bosons in a narrow-band optical resonator

ANDREAS HEMMERICH, Universitt Hamburg

I will review our recent results on atom-cavity physics with a rubidium Bose-Einstein condensate in a recoil resolving narrow bandwidth optical resonator. I will discuss cooling on a sub-recoil energy scale [1], in-situ monitoring of Bloch oscillations [2], matter wave superradiance [3], non-equilibrium dynamics in the open Dicke model [4], and the emergence of a self-organized cavity-induced Mott insulator [5]. References [1] M. Wolke, et al., *Science* 337, 85-87 (2012) [2] H. Keßler, et al., *New Journal of Physics* 18, 102001 (2016) [3] H. Keßler, et al., *Phys. Rev. Lett.* 113, 070404 (2014) [4] J. Klinder, et al., *PNAS* 112, 3290 (2015) [5] J. Klinder, et al., *Phys. Rev. Lett.* 115, 230403 (2015)