

Abstract Submitted
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Observation of a superradiant Mott insulator in the Dicke-Hubbard model JENS KLINDER, HANS KEßLER, CHRISTOPH GEORGES, JOSE VARGAS, ANDREAS HEMMERICH, Institut für Laser-Physik, Universität Hamburg, Germany — It is well known that the bosonic Hubbard model possesses a Mott insulator phase. Likewise, it is known that the Dicke model exhibits a self-organized superradiant phase. By implementing an optical lattice inside of a high-finesse optical cavity, both models are merged such that an extended Hubbard model with cavity-mediated infinite range interactions arises. In addition to a normal superfluid phase, two superradiant phases are found, one of them coherent and hence superfluid and one incoherent Mott insulating [1].

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