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Dirac Exciton-Polariton Condensates in a Triangular Lattice NA

YOUNG KIM, Stanford University, KENICHIRO KUSUDO, National Institute of Informatics, SVEN HOEFLING, ALFRED FORCHEL, University of Wuerzburg, YOSHIHISA YAMAMOTO, Stanford University — Microcavity exciton-polaritons are quantum bose particles arising from the strong light-matter coupling between cavity photons and quantum well excitons. Recently, we have investigated the behavior of condensates in artificial lattice geometries in two-dimension (2D). Coherent p - and d -orbital state in a 2D square lattice is recently observed. Here we investigate exciton-polariton condensates at Dirac points formed in a 2D triangular lattice and experimental mapping of Dirac dispersion and discuss the interaction effect. We anticipate that the preparation of high-orbital condensates can be further extended to probe dynamical quantum phase transition in a controlled manner as quantum simulation applications.

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