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Exciton-polariton Vortex-Antivortex lattices in two-dimensional hexagonal potential geometries NA YOUNG KIM, Stanford University, KENICHIRO KUSUDO, National Institute of Informatics, SVEN HOEFLING, ALFRED FORCHEL, University of Wuerzburg, YOSHIHISA YAMAMOTO, Stanford University — Microcavity exciton-polariotns possess the duality nature of wave and particle associated with the constituent particles, cavity photons and quantum well excitons. They are quantum bosons in the dilute density limit at low temperatures, exhibiting Bose-Einstein condensation (BEC) as a testbed to explore fundamental nature of physics. In particular, they are confined in two-dimensional plane, where exotic physical phenomena appear. Here, we discuss how to form vortex-antivortex lattices formed by exciton-polariton condensates trapped in two-dimensional hexagonal potential landscapes: triangular-, honeycomb- and Kagome- geometries. This will provide insights to invenstigate the BEC to Berenskii-Kosterlitz-Thouless transition.

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