

Abstract Submitted  
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**Realization of BEC on Cylindrical Surfaces with a Landau Gauge<sup>1</sup>**

BIAO HUANG, TIN-LUN HO, Ohio State Univ - Columbus — Landau's famous solution of 2D electron gas on a cylindrical surface with the Landau gauge is one of the most important paradigm in condensed matter physics. Here, we point out the ways to create the Bose analog of this paradigm and discuss the property of a BEC in this setting. The synthetic "magnetic field" normal to the cylindrical surface is created through the Berry's phase effects of bosons with hyperfine spins  $S$ . As the strength of synthetic field increases, the vortex pattern on the surface undergo a sequence of transitions. These vortex patterns are very different from the triangular lattice array in rotating gases. They have dramatic signatures in time of flight measurements and can be revealed easily.

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