

Abstract Submitted
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2D Skyrmion Crystal and Gauge Field for Neutral Atoms in Magnetic Lattices JEONG HO HAN, MOOSONG LEE, MIN-SEOK KIM, JAE-YOON CHOI, YONG-IL SHIN, Seoul Natl Univ, CENTER FOR SUBWAVELENGTH OPTICS AND DEPARTMENT OF PHYSICS AND ASTRONOMY, SEOUL NATIONAL UNIVERSITY TEAM — We describe a scheme to realize two-dimensional Skyrmion crystals for neutral atoms using magnetic lattices. Hexagonal magnetic lattices are generated from current-carrying wires arranged in triangular lattice configurations and an external bias field normal to the lattice plane. We show that real-space Skyrmion-lattice spin textures can be imposed on spinor condensates with the magnetic lattices and that one can achieve large effective magnetic flux per unit cell from the spin texture control [1]. We discuss on the experimental conditions to study Haldane model and possible topological phases in this scheme.

[1] J. Choi *et al.*, Phys. Rev. Lett 111, 245301 (2013)

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