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**Vortex-Lattice Phases in the Strongly-Interacting Limit of the Bose-Hubbard Model**[1] DANIEL GOLDBAUM, ERICH MUELLER, Cornell University — We observe a structural phase transition in the vortex lattice described by the rotating Bose-Hubbard model as the system approaches the insulating phase. A weak optical lattice potential pins vortices to the potential maxima (S. Tung, et. al. arXiv:cond-mat/0607697). However, using Gutzwiller mean-field theory in the strongly-interacting limit of the rotating Bose-Hubbard model, we find an interaction driven phase transition from the potential maximum centered vortex lattice to a potential minimum centered configuration. In addition, even closer to the insulating phase, our results suggest a recurrence of the maximum-centered phase.

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