Abstract Submitted
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Vortices near the Mott phase of a trapped Bose-Einstein condensate[1] DANIEL GOLDBAUM, ERICH MUELLER, Cornell University — We present a theoretical study of vortices within a harmonically trapped Bose-Einstein condensate in a rotating optical lattice. We find that proximity to the Mott insulating state dramatically affects the vortex structures. To illustrate we give examples in which the vortices: (i) all sit at a fixed distance from the center of the trap, forming a ring, or (ii) coalesce at the center of the trap, forming a giant vortex. We model the imaging of these structures by calculating time-of-flight column densities. As in the absence of the optical lattice, the vortices are much more easily observed in a time-of-flight image than *in-situ*.

D. S. Goldbaum and E. J. Mueller, *Vortices near the Mott phase of a trapped Bose-Einstein condensate*, arXiv:0808.1548.

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