

Abstract Submitted  
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**Generation and pinning of high winding-number vortices in Bose-Einstein condensates**<sup>1</sup> E. CARLO SAMSON, KALI WILSON, ZACHARY NEWMAN, EWAN WRIGHT, BRIAN P. ANDERSON, University of Arizona — We demonstrate the generation of pinned vortices with high winding numbers (up to 11) in Bose-Einstein condensates (BECs) held in highly oblate traps. In our method, a pancake-shaped BEC is initially produced in a combined magnetic and optical trap. Using time-varying magnetic fields to translate the position of the BEC with respect to a focused blue-detuned laser beam, we allow the BEC to spiral around the optical barrier until the barrier ends up at the BEC center. We explore the variation of the net winding number of the pinned vortices with the duration of the spiral trajectory. This procedure may be scaled to larger numbers of pinned vortices and will be useful in studies of superfluid dynamics and vortex interactions.

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