

Abstract Submitted
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Measuring the rates of spontaneous vortex formation in highly oblate Bose-Einstein condensates¹ TYLER NEELY, EDWARD SAMSON, University of Arizona, ASHTON BRADLEY, University of Otago, MATTHEW DAVIS, University of Queensland, BRIAN ANDERSON, University of Arizona — By studying the dynamics of the Bose-Einstein condensation transition in highly oblate ($\sim 11:1$ aspect ratio) traps, we have measured the dependence of spontaneous vortex formation on BEC growth rate, extending our previous experimental and numerical observations of spontaneous vortex formation in weakly oblate ($\sim 2:1$ aspect ratio) traps [1]. Our condensation procedure in these highly oblate traps allows us to create BECs over a large range of growth times, from approximately 200 ms to over 2 s. By characterizing vortex formation vs. BEC growth rate, and comparing experimental and numerical results, the Kibble-Zurek mechanism for topological defect formation may be quantitatively studied in our system. [1] C.N. Weiler, T.W. Neely, D.R. Scherer, A.S. Bradley, M.J. Davis, and B.P. Anderson., *Nature* **455**, 948 (2008).

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