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Measurements on Superconducting Nanorings Smaller than the Coherence Length[1] STEPHEN SNYDER, MICHAEL J. ERICKSON, JOSEPH KINNEY, YEONBAE LEE, J.J. NELSON, ALLEN GOLDMAN, University of Minnesota — The Little-Parks experiment on superconducting cylinders is an important demonstration of fluxoid quantization in superconductors. The transition temperature oscillations in magnetic field have a period of $h/2e$ for the micro cylinders in their studies, which was further evidence for Cooper paring at the time [W. A. Little, R. D. Parks, *PRL* **9**, 9 (1964)]. However recent theoretical works have suggested that in superconducting loops smaller than the coherence length this period changes from $h/2e$ to h/e, for details see [F. Loder, et al. *PRB* **78**, 174526 (2008)] and references therein. The destructive regime has also been observed experimentally in cylinders whose diameter is small compared to the coherence length [Y. Liu, et al. *Science* **294**, 2332 (2001)]. We present experimental work in an effort to achieve this limit in Al nanorings prepared by electron beam lithography. These measurements achieve a regime hitherto unexplored in nanorings with interesting consequences.

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