

Abstract Submitted
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Vortex exclusion transition¹ MILIND KUNCHUR, MANLAI LIANG, University of South Carolina, ALEXANDER GUREVICH, Old Dominion University — Ordinarily, Abrikosov vortices penetrate a type-II superconductor in a magnetic field larger than the lower critical field. However if the sample dimensions/s transverse to the applied magnetic field become smaller than some limit (found by Likharev to be $d < 4.4\xi$ for a film of thickness d where ξ is the coherence length), the formation of a parallel vortex in a film is excluded. We measured the transport response of a Molybdenum-Germanium superconducting film in parallel magnetic field and observed a sharp change in the V-I characteristics at a temperature which corresponds to the condition that $d \approx 4.4\xi(T)$. We present the evolution of the observed transport behavior as a function of temperature and magnetic field.

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