(7a5)

Low temperature vortex dynamics of $PrOs_4Sb_{12}$

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The magnetization of $PrOs_4Sb_{12}$ has been measured at temperatures down to 20mK using a DC SQUID. The magnetization hysteresis loops are observed under cycling field of 700Oe. As shown in Fig.1, An irreproducibility of the hysteresis loops appears below 150mK and becomes apparent as decreasing temperature. As proposed by Sigrist and Agterberg[1], the irreproducibility is attributable to pinning of vortex in domain walls separating different superconductivity state associated with broken time-reversal symmetry(TRS). Since μ-SR results show that TRS on $PrOs_4Sb_{12}$ breaks around the onset of superconductivity of 1.8K,[2] the domain wall should exist below 1.8K. However, the irreproducibility of the hysteresis loops on $PrOs_4Sb_{12}$ is observed far below Tc of superconductivity.

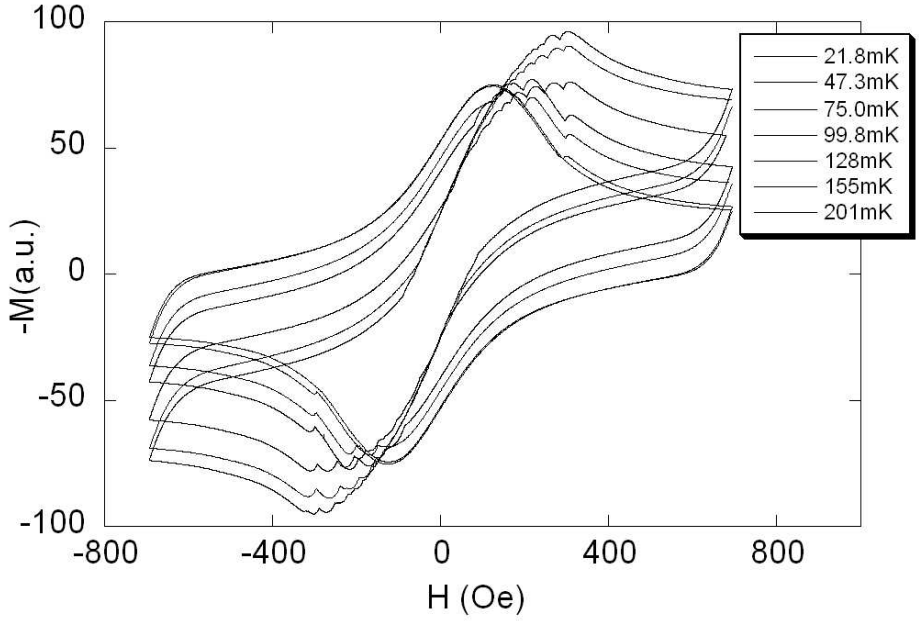

Figure 1: Magnetization hysteresis loops on $PrOs_4Sb_{12}$

[1] M. Sigrist and D.F. Agterberg, Prog. Theor. Phys. 102, 965 (1999)
[2] Y. Aoki et al., Phys. Rev. Lett. 91, 067003 (2003)