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Low temperature enhancement of the remanent magnetization in $CeCoIn_5$ C.F. MICLEA, Los Alamos National Laboratory, Los Almos, USA, M. NICKLAS, A.C. MOTA, F. STEGLICH, Max-Planck-Inst. for Chemical Physics of Solids, Dresden, Germany, M.M. ALTARAWNEH, N. HARRISON, Los Alamos National Laboratory, Los Almos, USA, I. VEKHTER, Louisiana State Univ., Baton Rouge, USA, J.D. THOMPSON, R. MOVSHOVICH, Los Alamos National Laboratory, Los Alamos, USA — We investigated the vortex dynamics together with RF penetration depth measurements in the heavy fermions compound $CeCoIn_5$ down to 50 mK. No strong pining is observed and the relaxation curves are logarithmic as expected from Kim-Anderson theory. The temperature dependence of the relaxation rate, S, with a small but finite residual value indicate that quantum tunneling plays a role in the vortex creep only at very low temperatures. Remarkably, a new phase transition marked by a strong increase in the remnant magnetization, M_{rem} is observed around $T = 0.3$ K in very low magnetic fields. M_{rem} increases roughly by a factor of two at 50 mK and we discuss if this can be caused solely by the change in the vortex lattice symmetry or underling magnetism has to play a role. Moreover, this anomaly is corroborated by the RF measurements at very low fields. We extended the vortex dynamics investigation to Pb irradiated $CeCoIn_5$. While the defects created by irradiation have a clear effect on the relaxation rates the enhancement of M_{rem} still takes place at the same temperature.

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