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Anomalous magnetic moment suppression in the superconducting and ferromagnetic coextistence region in $\mathbf{Pr_{1-x}Nd_xOs_4Sb_{12}}$[1] P.-C. HO, Physics Dept./Calif. State U., Fresno, D.E. MACLAUGHLIN, Physics & Astronomy Dept./U. Calif., Riverside, L. SHU, Physics Dept./U. Calif., San Diego, S. ZHAO, J.M. MACKIE, Physics & Astronomy Dept./U. Calif., Riverside, M.B. MAPLE, Physics Dept./U. Calif., San Diego, T. YANAGISAWA, Hokkaido U. — A previous study [1] of the effect of the ferromagnetism (FM) on unconventional superconductivity (SC) in $Pr_{1-x}Nd_xOs_4Sb_{12}$ found that SC and FM are both suppressed toward a critical concentration $x_{cr,1} \sim 0.6$, and the x dependence of the upper critical field H_{c2} has a curvature break at $x_{cr,2} \sim 0.3$. The specific heat measurements indicate that FM extends into the SC region. In order to probe the FM in the SC-FM coexistence region, μ-SR measurements are performed on the samples near $x_{cr,1}$ ($x = 0.55$, 0.5, and 0.45). A small quasistatic field $\sim 40\,\mathrm{Gauss}$ was found in the field cooled state of these samples ($H = 10\,\mathrm{Oe}$) and this field is corresponding to a frozen Nd moment of $\sim 0.1\,\mu_B$, which is much smaller than the CEF ground state moment of the Nd^{3+} ion ($\sim 1.36\mu_B$). The origin of the moment reduction in $Pr_{1-x}Nd_xOs_4Sb_{12}$ is unclear currently. The Kondo effect, which is usually involved in such a reduction, has never been observed in Nd-based materials. [1] Ho, et. al., 2009 APS March Meeting, A41.00005 (2009); manuscript in preparation (2009).

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