Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Investigation of Broken Time Reversal Symmetry in Pr-concentrated side of $\mathbf{Pr_{1-x}Nd_xOs_4Sb_{12}}$[1] P.-C. HO, CSU-Fresno, D. E. MACLAUGHLIN, UC Riverside, M. B. MAPLE, UC San Diego, L. SHU, Fudan U, China, O. O. BERNAL, CSU-Los Angeles, A. D. HILLIER, ISIS/STFC, Harwell, UK, T. YANAGISAWA, Hokkaido U, Japan — One of the intriguing features that indicate unconventional superconductivity (SC) in the filled skutterudite compound $PrOs_4Sb_{12}$ is the broken time reversal symmetry (TRS)[1]. Previously in our muon spin relaxation (μSR) study on the influence of the Nd^{3+} moment in $Pr_{1-x}Nd_xOs_4Sb_{12}$[2], we found that the magnetism extends deep in the SC state for $0.45 \leq x \leq 0.55$ and a strong μ^+ dynamic rate in $x = 0.25$ possibly resulting from significant Nd moment fluctuations. In our most-recent results of μSR experiments in the x=0.05 and 0.1 samples, at zero magnetic field, a combined exponential and Gaussian relaxation behavior was found. The exponential rate has a strong temperature dependence below T_c, which may originate from spontaneous supercurrents or spin texture due to broken TRS. [1] Y. Aoki et al., PRL 91, 067003 (2003). [2] D. E. MacLaughlin et al., PRB 89, 144419 (2014).

[1]Research at CSU-Fresno is supported by NSF DMR-1506677; at UCSD by NSF DMR-1206553 and US DOE DEFG02-04ER46105, at CSU-LA by NSF DMR-1523588; at Fudan U. by Chinese NSF-1147060; at Hokkaido U. by JSPS KAKENHI 26400342, 15K05882, and 15K21732.

Pei-Chun Ho
CSU-Fresno

Date submitted: 11 Nov 2016 Electronic form version 1.4