Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Suppression of time reversal symmetry breaking superconcutivity in $Pr(Os,Ru)_4Sb_{12}$ and $(Pr,La)Os_4Sb_{12}$[1] LEI SHU, UCSD, W. HIGEMOTO, JAEA, Japan, Y. AOKI, TMU, Japan, A.D. HILLIER, ISIS, UK, K. OHISHI, K. ISHIDA, KU, Japan, R. KADONO, A. KODA, KEK, Japan, O.O. BERNAL, CSU, D.E. MACLAUGHLIN, UCR, Y. TUNASHIMA, Y. YONEZAWA, S. SANADA, D. KIKUCHI, H. SATO, TMU, Japan, H. SUGAWARA, UT, Japan, T.U. ITO, JAEA, Japan, M.B. MAPLE, UCSD — Zero-field muon spin relaxation (μSR) experiments have been carried out in the $Pr(Os_{1-x}Ru_x)_4Sb_{12}$ and $Pr_{1-y}La_yOs_4Sb_{12}$ alloy systems to investigate broken time-reversal symmetry (TRS) in the superconducting state, signaled by the onset of a spontaneous static local magnetic field B_s. In both alloy series B_s initially decreases linearly with solute concentration. Ru doping is considerably more efficient than La doping ,with a $\sim$50% faster initial decrease. The data suggest that broken TRS is suppressed for Ru concentration larger than 0.6, but persists for essentially all La concentrations. Our data support the theory of TRS-breaking superconductivity via crystal-field excitonic Cooper pairing of Koga, Matsumoto, and Shiba.

[1]This work was supported by the U.S. NSF 0422674, 0801407, 0604015, and 0802478, the U.S. DOE, DE-FG-02-04ER46105, and by the Grant-in-Aid for Scientific Research Priority Area "Skutterudite" No. 15072206.

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Date submitted: 18 Nov 2010 Electronic form version 1.4