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**Low temperature normal and superconducting state properties of lightly doped $PrOs_4Sb_{12}$** N.A. FREDERICK, S.K. KIM, T.A. SAYLES, P.-C. HO, N.P. BUTCH, M.B. MAPLE — The compound $PrOs_4Sb_{12}$ is a heavy fermion superconductor, the first one based on Pr, with a superconducting transition temperature $T_c = 1.85$ K. It has many interesting properties at low temperatures: multiple superconducting phases, apparently with nodes in the energy gap; possible time reversal symmetry breaking; and a High Field Ordered Phase (HFOP), believed to be due to antiferroquadrupolar ordering, in the normal state above 4.5 T. When Ru is substituted for Os to form $Pr(Os_{1-x}Ru_x)_4Sb_{12}$, the multiple superconducting transitions observed in the specific heat seem to disappear, the gap structure may change, and the HFOP is drastically reduced. However, these previous results only included a minimum Ru substitution of $x = 0.05$. In this talk, we will present new measurements of the specific heat, magnetic susceptibility, and electrical resistivity of $Pr(Os_{1-x}Ru_x)_4Sb_{12}$ for $x \leq 0.05$ at low temperatures and high magnetic fields. This research was supported by the U.S. DOE (DE-FG02-04ER-46105) and the NSF (DMR-03-35173).

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