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LaOs4Sb12 and LaRu4Sb12, a contrast with the unconventional behavior of PrOs4Sb12 DANIEL VANDERVELDE, M. B. SALAMON, Univ. of Illinois Urbana Champaign, ELBERT CHIA, Los Alamos National Lab, H. SUGAWARA, Tokyo Metropolitan Univ., H. SATO, Tokyo Metropolitan Univ. — Recent measurements of the penetration depth λ(T) in single crystals of $PrOs_4Sb_{12}$ have revealed unconventional behavior in the order symmetry of the superconducting energy gap[1]. We present, for contrast, high precision measurements undertaken of $LaOs_4Sb_{12}$ and $LaRu_4Sb_{12}$, under analogous conditions, where we observe fully gapped behavior. These results show that the substitution of La for Pr yields similar behavior as that seen in the fully gapped superconductor $PrRu_4Sb_{12}$ [2]These materials appear to have SC electron densities, ρ, characteristic of s-wave, BCS superconductors with the data exhibiting a fit to ρ of exponential at low temperature. All measurements were done at temperatures from 0.1K to 0.9K for $LaOs_4Sb_{12}$, and to 3.8K for $LaRu_4Sb_{12}$ using a self-inductive oscillator technique. Fits of ρ were made assuming specific heat jumps of $1.74\gamma T_c$ and $1.81\gamma T_c$ respectively with T_c's of 0.76K and 3.6K respectively. Measurements have been performed on $Pr(Os_{1-x}Ru_x)_4Sb_{12}$ [3] to map it's transition from fully gapped to unconventional behavior, and so we propose future work of mapping a similar transition in a series of $Pr_{1-x}La_xOs_4Sb_{12}$ materials. [1]Elbert E.M. Chia *et al.*, Phys. Rev. Lett. 91, 247003 (2003) [2] Elbert E.M. Chia *et al.*, Phys. Rev. B 69 180509(R) (2004) [3] Elbert E.M. Chia *et al.*, condmat/0411395

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