

Abstract Submitted
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Crystal fields, magnetoresistance, and superconductivity of $\text{Pr}_{1-x}\text{La}_x\text{Os}_4\text{Sb}_{12}$ ¹ BOHDAN ANDRAKA, COSTEL R. ROTUNDU, MARTIN E. MCBRIARTY, University of Florida — Investigation of $\text{Pr}_{1-x}\text{La}_x\text{Os}_4\text{Sb}_{12}$ in strong magnetic fields implies that crystalline electric field (CEF) energies of Pr are unchanged to at least $x=0.2$. CEF energies for $x=0.4$ are approximately 20 % larger than for $x=0.2$ and increase further for $x=0.67$. Specific heat discontinuity at T_c and the upper critical field slope at T_c indicate that the strongest suppression of m^* takes place between $x=0$ and $x_{cr} \sim 0.3$. High accuracy specific heat data obtained on a large crystal of $x=0.67$ exhibit significant deviations with respect to the Schottky specific heat corresponding to singlet-triplet excitations. Similar deviations are seen for other crystals with $x > x_{cr}$. On the other hand, magnetoresistance of moderately and strongly dilute alloys is consistent with predictions for a singlet-triplet CEF model. Correlations between these measurements of CEF's and superconductivity of $\text{Pr}_{1-x}\text{La}_x\text{Os}_4\text{Sb}_{12}$ will be discussed. Also, evidences against and for homogeneous coexistence of two superconducting transitions in the specific heat of pure $\text{PrOs}_4\text{Sb}_{12}$ will be presented and discussed.

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Bohdan Andraka
University of Florida

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