

# Superconductivity in $\text{LaPd}_2(\text{Al,Ga})_2$ Compounds

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La-based compounds are generally used as the non-magnetic analogues for rare-earth intermetallics, but a few of them exhibit very interesting properties, especially then the superconductivity (SC) at low temperatures. Our broader study of  $(\text{Ce,L a})\text{Pd}_2\text{Al}_{2-x}\text{Ga}_x$  system revealed the transition to the SC state in all La counterparts. The measured specific heat data deviates significantly from the BCS theory predictions and are discussed in context of unconventional superconductivity. The measured data do not follow weak-coupling BCS limit. Further, almost quadratic temperature dependence is observed below  $T_{\text{SC}}$  which points to an axial state with line nodes in the superconducting gap structure. The origin of observed unconventional SC in  $\text{LaPd}_2\text{Al}_{2-x}\text{Ga}_x$  can be found in orthorhombic non-centrosymmetric crystal structure, which they adopt at low temperatures. The absence of inversion symmetry causes that the antisymmetric spin-orbit coupling play an important role in the electronic properties of these materials.