

Field-induced quantum critical point and nodal superconductivity in the heavy-fermion superconductor Ce_2PdIn_8

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The in-plane resistivity ρ and thermal conductivity κ of the heavy-fermion superconductor Ce_2PdIn_8 single crystals were measured down to 50 mK. A field-induced quantum critical point, occurring at the upper critical field H_{c2} , is demonstrated from the $\rho(T) \sim T$ near H_{c2} and $\rho(T) \sim T^2$ when further increasing field. Large residual linear term κ_0/T at zero field and the rapid increase of $\kappa(H)/T$ at low field give evidences for nodal superconductivity in Ce_2PdIn_8 . The jump of $\kappa(H)/T$ near H_{c2} suggests a first-order-like phase transition at low temperature. These results mimic the features of the famous CeCoIn_5 superconductor, implying that Ce_2PdIn_8 may be another interesting compound to investigate the interplay between magnetism and superconductivity.