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Superconducting gap symmetry in $Pr_{1-x}Ce_xPt_4Ge_{12}$ studied through specific heat and resistivity measurements[1] R. B. ADHIKARI, Y. P. SINGH, S. ZHANG, Kent State University, K. HUANG, D. YAZICI, I. JEON, M. B. MAPLE, University of California, San Diego, M. DZERO, C. C. ALMASAN, Kent State University — We present results of a systematic study of polycrystalline samples of $Pr_{1-x}Ce_xPt_4Ge_{12}$ ($0 \leq x \leq 0.2$) through low-temperature specific heat and electrical resistivity measurements, which allow us to explore the nature of the superconducting gap symmetry and its evolution with Ce concentration x. As reported earlier, Ce substitution on the Pr site suppresses monotonically the superconducting (SC) transition temperature T_c: a small Ce concentration of x = 0.14 suppresses T_c from 7.8 K in the parent compound to 0.6 K. This study points toward a two-band SC gap scenario for the parent compound, in which the larger gap is nodeless, whereas the smaller gap is nodal. While the larger gap remains nodeless irrespective of the amount of Ce substitution, a rather dramatic effect of Ce substitution is seen in the evolution of the smaller gap: a small amount of Ce substitution (x <0.04) increases the value of this gap, while for x >0.04, the data suggest that the nodal character of this gap disappears and both SC order parameters become nodeless. We will discuss our findings in the context of other resent results on this series of filled skutterudite compounds.

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