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Andreev Spectroscopy Study of the Heavy-Fermion Superconductor $PrOs_4Sb_{12}$[1] C.S. TUREL, I. FRIDMAN, J.Y.T. WEI, University of Toronto, W.M. YUHASZ, M.B. MAPLE, University of California at San Diego
— The discovery of superconductivity in the heavy-fermion material $PrOs_4Sb_{12}$ has attracted widespread interest. In particular, there is evidence for multiple superconducting order parameters, at least one of which is believed to have nodes. We present Andreev spectroscopy data, down to 80 mK and up to 2.5 T, taken using ballistic point contacts made with Pt-Ir tips on single crystals of $PrOs_4Sb_{12}$. Pronounced zero-bias conductance peaks (ZBCP's) seen in the differential conductance spectra, show the existence of nodes in the order parameter. The magnetic field and temperature evolution of the spectra were studied to track how the pairing symmetry evolved, allowing us to map out the order parameter phase diagram. We observed that the ZBCP's vanished at a magnetic field, H^*, lower than the upper critical field, H_{c2}. This implies a field-driven change in the nodality of the order parameter at H^*, suggesting there are multiple superconducting phases with different pairing symmetries in $PrOs_4Sb_{12}$.

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