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Andreev Spectroscopy Study of Multigap Pairing in $PrOs_4Sb_{12}$[1]
C.S. TUREL, J.Y.T. WEI, University of Toronto, B. DJURKOVIC, J.B. KYCIA, University of Waterloo, W.M. YUHASZ, R. BAUMBACH, M.B. MAPLE, University of California at San Diego — The recent discovery of superconductivity in the filled skutterudite heavy fermion material $PrOs_4Sb_{12}$ has generated widespread interest. Different experimental studies have reported various field-vs-temperature phase diagrams, with mixed evidence for nodes in the pairing gap. Some experiments have also indicated the presence of multiple gaps, suggesting that the pairing involves either multiple bands or multiple order parameters [1,2]. 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 $Pr(Os_{1-x}Ru_x)_4Sb_{12}$. We observed distinct spectral evidence for gap nodes. We also observed multiple spectral features arising from Ru-doping. We interpret the evolution of these spectral features within the scenario of multigap pairing.
[1] G. Seyfarth et al. Phys. Rev. Lett. **97**, 236403 (2006).
[2] R.W. Hill et al. cond-mat/0709.4265.

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