

Abstract Submitted
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Point-contact Andreev reflection tunneling spectroscopy (PCARTS) of the superconducting gap structure in

LuNi₂B₂C¹ XIN LU, W.K. PARK, L.H. GREENE, Physics and FSMRL, UIUC, SUNMOG YEO, KYU-HWAN OH, SUNG-IK LEE, Pohang, Korea, SERGEY L. BUD'KO, PAUL C. CANFIELD, Ames Lab and ISU — The PCARTS technique is employed to investigate the gap anisotropy and proposed existence of point-nodes in LuNi₂B₂C ($T_C \sim 16$ K). Differential conductance spectra are taken from two different sets of single crystal samples along three major orientations: [001], [110], and [100]. Analyzing using the single-gap Blonder-Tinkham-Klapwijk (BTK) model reproducibly shows the gaps along these directions are 2.4, 2.6, and 2.3 meV, respectively, for one set of samples and 2.4, 2.8, and 2.7 meV, respectively, for the other set. This is smaller than the gap anisotropy reported by other groups[1]. At low temperatures, the single-gap BTK model does not satisfactorily fit our data. Models employing an anisotropic gap are being investigated, as are experiments parameterizing the tunneling cone effect.

[1] Y.G. Naidyuk, et al,condmat/0609769(2006); N.L.Bobrov, et al,PRB 71, 014512 (2005); S. Mukhopadhyay, et al,PRB 72, 014545 (2005).

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