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Point Contact Spectroscopy of Iron PNICTIDE: Effects of Sample Carrier Design and Fritting on the Conductivity and Observable Energy Gaps of $Ba_{(1-x)}K_xFe_2As_2$.[1] LUKE CONOVER, SAM BICHE, OBERON WACKWITZ, JOSEPH LAMBERT, ROBERTO RAMOS, none — Multi-band superconductors, such as the iron pnictides, can exhibit multiple energy gaps depending on the crystal growth conditions and on which tunneling directions are made accessible by the sample fabrication process. The gaps are often anisotropic with respect to the crystal lattice, with some gaps predominantly conducting parallel or perpendicular to the c-axis of the lattice. Using point contact spectroscopy (PCS), it is possible to measure the energy gaps along the axes simultaneously at low temperatures. We describe our progress in measuring the energy gaps of iron pnictide single crystals (K-doped Ba-based 122 family) using PCS, discussing the effects of our soft point contact carrier design, contact size (effective resistance through the junction) and electrically tuning the point contact region using fritting techniques.

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