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Measuring the Superconducting Energy Gaps of Doped Iron Pnictide Superconductors $Ba_{(}1-x)K_xFe_2A_2 using Soft Point Contact Spectroscopy$[1] OBERON WACKWITZ, LUKE CONOVER, CAITLYN MCCONNELL, University of the Sciences, GUO-TAI TAN, YU SONG, CHENGLIN ZHANG, PENGCHENG DAI, Rice University, ROBERTO RAMOS, University of the Sciences — The iron-based superconductors or iron pnictides provide a new platform where the phenomenon of multi-band superconductivity can be studied. Multiple energy gaps in these samples can be measured, depending on the way the crystal has been grown and how the tunneling directions are accessed through fabrication and the way electrical contacts are made. These energy gaps are anisotropic relative to the crystal lattice, with some gaps primarily conducting parallel or perpendicular to the c-axis of the lattice. In this presentation, we report ongoing measurements of the energy gaps of K-doped iron pnictide Ba(1-x)KxFe2As2 superconductors, where x = 0.6, 0.5, and 0.33 near liquid helium temperatures. We report the observation of peaks and broad shoulders; some correlate well with existing data from literature while other new peaks are unexplained. These measurements have been performed fully by undergraduates.

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