

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Differential Conductance Measurements of MgB₂/I/Pb Heterojunctions and all-MgB₂ Junctions¹ DAVID CUSICK², Taylor University, MATTHEW ECKHARDT, Indiana Wesleyan University, WENQING DAI, QI LI, Pennsylvania State University, KE CHEN, DANIEL CUNNANE, Temple University, C.G. ZHUANG, None, X.X. XI, Temple University, MICHIO NAITO, Tokyo University of Agriculture and Technology, ROBERTO RAMOS, Indiana Wesleyan University — We present our work characterizing several types of Magnesium Diboride Josephson junctions, including MgB₂/I/Pb heterojunctions and all-MgB₂ junctions. We will report on the I-V and dI/dV-V data collected at various temperatures using both a cryocooler-based experimental platform between 2 and 20 Kelvin and using a ³He probe platform between 0.3 and 1.0 Kelvin. These were both developed by undergraduates in a liberal arts university. Using high-sampling rates with a 24-bit data acquisition card and access to a broad range of temperatures, we track and report energy gap distributions and temperature-dependent features of dI/dV peaks of MgB₂, comparing these with theoretical predictions.

¹R.C.R. acknowledges support from National Science Foundation Grant # DMR-1206561.

²David Cusick is a Taylor University student interning at Indiana Wesleyan University.

David Cusick
Taylor University

Date submitted: 14 Nov 2014

Electronic form version 1.4