

Abstract Submitted
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Cryogenic Scanning Tunneling Spectroscopy of Superconducting Iron Chalcogenide Single Crystals¹ J.Y.T. WEI, IGOR FRIDMAN, University of Toronto and Canadian Institute for Advanced Research, KUO-WEI YEH, MAW-KUEN WU, Institute of Physics, Academia Sinica, Taiwan, RONGWEI HU², C. PETROVIC, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory — We report scanning tunneling spectroscopy measurements on the iron-based superconductors of the “11” family including $\text{Fe}_{1-y}\text{Te}_{1-x}\text{Se}_x$ and $\text{Fe}_{1-y}\text{Te}_{1-x}\text{S}_x$. Conductance spectra and atomically-resolved images are obtained on single crystals down to 300 mK. A gap-like structure is observed, showing an asymmetric spectral background, non-trivial spatial variation and temperature dependence. We discuss our data in terms of possible gap anisotropy and doping inhomogeneities, and in relation to other recent spectroscopic measurements on iron-based superconductors.

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²Present address: Ames Laboratory and Iowa State University

J.Y.T. Wei
University of Toronto

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