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Probing the pairing symmetry of candidate topological superconductor CuxBi2Se3 via point contact spectroscopy XUNCHI CHEN, CHAO HUAN, Georgia Institute of Technology, YEW SAN HOR, Missouri University of Science and Technology, CARLOS SA DE MELO, ZHIGANG JIANG, Georgia Institute of Technology — We perform point contact spectroscopy measurements on the candidate topological superconducting material, $Cu_{0.25}Bi_2Se_3$, using a normal-metal gold tip or an s-wave superconductor niobium tip. For the Au- $Cu_{0.25}Bi_2Se_3$ interface, we observe a marked zero-bias conductance peak in the point contact spectra on the superconducting area of the sample, indicative of unconventional superconducting pairing symmetry. The point contact spectra also exhibit a pronounced linear background, which we attribute to inelastic scattering at the tip-sample interface. We compare the background subtracted spectra to a single-band p-wave model. For the Nb- $Cu_{0.25}Bi_2Se_3$ interface, we observe a two-gap-like feature in the spectra, corresponding to the superconducting gap of the niobium and the sample, respectively. In addition, we find that the spectra are highly dependent on the interface barrier strength, and exhibit non-monotonic temperature dependence at zero bias, possibly owing to the incompatibility of the pairing symmetries between the Nb tip and the sample. Our results signify the unconventional superconductivity in $Cu_xBi_2Se_3$.

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