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Multiple superconducting gaps in hole-doped $Ba_{0.85}K_{0.15}Fe_2As_2$ observed by nano-scale Andreev reflection spectroscopy[1] GUOXIONG SU, University of Houston — Recently, intensive attention has been paid to iron-based superconductors owing to their high transition temperature and intriguing physical properties, especially the mechanism for the superconductivity. Here we investigate the gap structure of $Ba_{0.85}K_{0.15}Fe_2As_2$ with Tc $\sim$ 25 K. By employing a novel experimental approach to point-contact Andreev reflection spectroscopy, experimental support has been found for the multiple superconducting gaps in hole-doped $Ba_{0.85}K_{0.15}Fe_2As_2$. The effects of temperature and magnetic field will be discussed as well. We also investigate the behavior of Andreev reflection spectrum at high biased voltage range. This work opens up new opportunity to understand the pairing mechanism and study gap structures in iron-based superconductors.

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