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Scanning

Tunneling Microscopy of Fe Doped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ BRIAN KOOPMAN, Clark University, W.D. WISE, KAMALESH CHATTERJEE, MIT, GENDA GU, Brookhaven National Laboratory, E.W. HUDSON, Penn State University, M.C. BOYER, Clark University — We will present a low temperature scanning tunneling microscopy (STM) study of the high-temperature superconductor $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ (Bi-2212) which has been intentionally doped with magnetic (Fe) impurities in order to locally disrupt superconductivity around the impurities. We examine spatial variations in the density of states in the vicinity of Fe impurities, and compare our results with previous STM studies of Ni doped Bi-2212. Notable differences between Fe and Ni impurities include differences in the number and energy locations of the impurity peaks. Our analysis shows that Fe is a weaker magnetic impurity than Ni and that the particle-hole symmetry present in the spectra of Ni impurities is not as obvious in Fe impurities. By studying how these impurities interact with superconductivity in Bi-2212 we hope to understand more about the superconducting mechanism in high-temperature superconductors.

- Prefer Oral Session
 Prefer Poster Session

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