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Impurity-induced changes in the superconducting order parameter in iron-based superconductors $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ YUTA MIZUKAMI, Y. KAWAMOTO, K. HASHIMOTO, S. KASAHARA, Department of Physics, Kyoto University, M. KONCZYKOWSKI, C.J. VAN DER BEEK, B. BOIZOT, Ecole Polytechnique, R. PROZOROV, The Ames Laboratory, Y. WANG, A. KREISEL, P.J. HIRSCHFELD, Department of Physics, University of Florida, V. MISHRA, Materials Science Division, Argonne National Laboratory, Y. MATSUDA, T. SHIBAUCHI, Department of Physics, Kyoto University — To determine the symmetry and structure of superconducting order parameter in iron-based superconductors is one of the prime challenges in strongly correlated electron systems. A systematic study on the effect of impurity scattering on the structure of superconducting order parameter can be used to distinguish S++ and S+- symmetry. We introduced the point defects on iron-based superconductors $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ by electron irradiation which does not change lattice constants and carrier density, and performed magnetic penetration depth measurements on those samples. Here, we report on the suppression of the critical temperature and the change of the superconducting gap structure in iron-based superconductors $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ with increasing the defect density, from which we discuss the superconducting symmetry in this system.

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