

Abstract Submitted  
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**A shift of the phase diagram in  $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$  by controlled disorder** YUTA MIZUKAMI, KOHEI MATSUURA, University of Tokyo, MARCIN KONCZYKOWSKI, Ecole Polytechnique, TATSUYA WATASHIGE, SHIGERU KASAHARA, YUJI MATSUDA, Kyoto University, TAKASADA SHIBAUCHI, University of Tokyo — The relationship between unconventional superconductivity and quantum critical point (QCP) is one of the most important issues in strongly correlated electron systems. A systematic study on the impurity scattering is performed in iron-based superconductor  $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ , in which clear evidence for QCP has recently been presented[1]. We introduce point defects into  $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$  by electron irradiation, which has less effects on lattice constant and carrier density compared to the chemical substitution of atoms[2]. Here, we report on the changes of the magnetic and superconducting transition temperatures with electron irradiation in a wide range of substitution, from which we discuss the effect of impurity scattering on superconducting dome and QCP. [1]T. Shibauchi *et al.*, *Annu. Rev. Condens. Matter Phys.* **5**, 113 (2014). [2]Y. Mizukami *et al.*, *Nat. Commun.* **5**, 5657 (2014).

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