

Flux-Line Lattice State in FeAs-Based Superconductor (Ba,K)Fe₂As₂

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We have observed temperature and magnetic field dependence of penetration depth λ in single crystalline samples of Ba_{1-x}K_xFe₂As₂ ($x = 0.6, 0.7$ and 1.0) in order to clarify the superconducting gap mechanism. We have found that T dependence of $1/\lambda^2$ in KFe₂As₂ with $H \parallel c$ and $H \perp c$ are completely different. While the T dependence of $1/\lambda^2$ observed with $H \parallel c$ is well fitted by a two-full-gap model, T -linear behavior is clearly observed below $\sim T_c/2$ with $H \perp c$, suggesting the existence of line node. This result is seemingly contradictory behavior, however, it is well interpreted when we take into account the horizontal line node (line node in ab -plane) in KFe₂As₂¹. At the presentation, we will also report the T and H dependence of λ in Ba_{1-x}K_xFe₂As₂ ($x = 0.6, 0.7$) and discuss in detail.

* Also at JST, Transformative Research-Project on Iron Pnictides (TRIP), Tokyo, Japan

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¹S. Graser *et al.*, Phys. Rev. B **81**, 214503 (2010).