

Cyclotron Resonance in KFe_2As_2

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We report the results of cyclotron resonance (CR) experiments in an iron-based superconductor KFe_2As_2 . The CR measurement is a powerful probe to obtain the effective masses directly. In contrast to the quantum oscillations (QOs), it has been believed that the CR effective mass (m_{CR}^*) is unrenormalized by the electron-electron (e-e) interaction[1]. Hence, one can discuss the contribution of e-e interaction in the mass enhancement by comparison between m_{CR}^* and QO effective masses. In our experiment, a series of CR signal with an effective mass of $(3.4 \pm 0.05)m_e$ is observed (m_e is the free electron mass). This CR is attributed to the α FS observed in the recent de-Haas van Alphen (dHvA) measurement. Our main result is that the m_{CR}^* is significantly smaller than the m_{dHvA}^* , providing the direct evidence of the strong mass enhancement by the e-e interaction. ¹

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