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Spin density wave instability and pseudogap formation in EuFe2As2 JONG HOON SHIN, SOON JAE MOON, Seoul National University, JU-YOUNG KIM, Gwangju Institute of Science and Technology, SEUNG HYUN KIM, WOO SEOK CHOI, BYUNG CHUL JEON, Seoul National University, YUN SANG LEE, Soongsil University, BEONG KI CHO, Gwangju Institute of Science and Technology, KEE HOON KIM, TAE WON NOH, Seoul National University —
Recently, iron arsenide superconductors have aroused great amount of interest. In these compounds, by doping electron or hole, the superconductivity arises with the suppression of spin density wave (SDW) order. The close relation between the superconducting state and SDW instability suggests that the magnetic fluctuation might play an important role. Therefore, it is imperative to study the magnetic ground state of the parent compounds to understand the mechanism of the superconductivity. We investigated optical conductivity spectra of EuFe2As2 single crystals, which showed SDW order below about 190 K. Across the transition temperature, the optical spectral weight transferred from low energy (below 900cm-1) to higher energy (above 900 cm-1), forming a pseudogap. In the SDW phase, the sharp Drude-like response still remained. Our results indicate that the SDW formation induce the partial gap opening in the Fermi surface of EuFe2As2.

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