Abstract Submitted
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Quasiparticle lifetime and edge localized states of graphite studied by high-resolution ARPES KATSUAKI SUGAWARA, TAKAFUMI SATO, SEIGO SOUMA, TAKASHI TAKAHASHI, Tohoku University, HIROHITO SUEMATSU, RIKEN, Spring-8 — We have performed an ultrahigh-resolution angle-resolved photoemission spectroscopy (ARPES) of high-quality graphite single crystal (kish graphite) to elucidate the band structure and many-body interaction. We clearly observed an extremely small hole-like Fermi surface centered at the K(H) point, a sharp quasiparticle peak in the vicinity of the Fermi level (E_F), and a kink in the dispersin at 0.18 eV.[1] We also found first evidence for the edge localized states near E_F, whose energy dispersion is markedly different from that of the bulk band. We will discuss the energy- and temperature-dependence of quasiparticle lifetime in relation to the strong electron-phonon coupling, the electron-plasmon interaction, and the electron-hole pair excitations. [1]K. Sugawara *et. al.,* Phys. Rev. Lett. **98** (2007) 036801. [2]K. Sugawara *et. al.,* Phys. Rev. B **73** (2006) 045124.

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