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In-plane anisotropic resistivity in the antiferromagnetic phase of Fe-based superconductors KOUDAI SUGIMOTO, Yukawa Institute for Theoretical Physics, Kyoto University, PETER PRELOVŠEK, Jožef Stefan Institute, EIJI KANESHITA, Sendai National College of Technology, TAKAMI TOHYAMA, Yukawa Institute for Theoretical Physics, Kyoto University — The parent compound of Fe-based superconductors has a stripy-ordered antiferromagnetic phase showing in-plane anisotropy of resistivity. Recent experiments have suggested that impurities such as Co substituted for Fe play a crucial role in the anisotropy. We start with a five-orbital Hubbard model with mean-field approximation. We examine the anisotropy of resistivity in the antiferromagnetic phase by applying the memory-function approach treating the isotropic nonmagnetic impurities. Near undoped region, where the Drude weight gives anisotropy opposite to experimental observation, the memory-function approach yields a proper anisotropic behavior: The resistivity in the antiferromagnetically ordered direction is smaller than that in the ferromagnetic direction and the anisotropy reverses when holes are introduced. The origin of the anisotropy can be understood from the interplay of impurity scattering and the character of Fermi surface.

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