Topological and Transport Properties of Dirac Fermions in Antiferromagnetic Metallic Phase of Iron-Based Superconductors TAKAMI TOHYAMA, TAKAO MORINARI, Yukawa Institute for Theoretical Physics, Kyoto University, EIJI KANESHITA, Sendai National College of Technology, KOUDAI SUGIMOTO, Yukawa Institute for Theoretical Physics, Kyoto University — We investigate Dirac fermions in the antiferromagnetic metallic state of iron-based superconductors [1]. Deriving an effective Hamiltonian for Dirac fermions, we reveal that there exist two Dirac cones carrying the same chirality, contrary to graphene, compensated by a Fermi surface with a quadratic energy dispersion as a consequence of a non-trivial topological property inherent in the band structure. We also find that the presence of the Dirac fermions gives the difference of sign-change temperatures between the Hall coefficient and the thermopower. This is consistent with available experimental data. The Dirac fermions also contribute to in-plane anisotropy of the optical conductivity [2].