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Quantum correction to the anomalous Hall conductivity of ferromagnetic metallic films KHANDKER MUTTALIB, University of Florida, PETER WOELFLE, University of Karlsruhe, Germany — Motivated by new anomalous Hall effect (AHE) data on polycrystalline Fe films we calculate the interaction correction to the AHE for both the skew scattering and the side jump mechanisms. The correction to the longitudinal conductivity is also considered. We use a model of randomly located short range impurity potentials of arbitrary scattering strength, inducing spin-orbit scattering, and an isotropic band ferromagnet. The quantum correction is found to depend sensitively on the strengths of the scattering potential and the spin-orbit interaction. In the limit of weak scattering, known results are recovered.

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