

Abstract Submitted
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Theory of Low-Temperature Hall Effect in Stripe-Ordered Cuprates¹ JIE LIN, ANDREW MILLIS, Department of Physics, Columbia University — We investigate the effect of static anti-phase stripe order on the weak-field Hall effect of electrons with dispersion appropriate to the high T_c cuprates. We first consider the cases where the magnitudes of the spin and charge stripe potentials are smaller than or of the same order as the bandwidth of electrons. In a model with only spin stripe potential, and at carrier concentrations appropriate to hole-doped cuprates, the calculated R_H shows sign change as increasing the stripe potential, in semi-quantitative agreement with data. In a charge-stripe-potential-only model, R_H increases as the charge stripe potential increases, with no sign change occurring. In a model with both stripe potentials, R_H may be enhanced or may change sign. We also consider the case in which the magnitudes of the stripe potentials are much larger than the bandwidth, where analytical results can be obtained.

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