

Abstract Submitted
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In-plane magnetodrag in dilute bilayer two-dimensional systems¹

E.H. HWANG, S. DAS SARMA, Univ. of Maryland at College Park — We report anomalous drag resistance behavior in dilute bilayer two-dimensional (2D) hole systems in the presence of a magnetic field parallel to the 2D plane. We have carried out a many-body Fermi liquid theory calculation of bilayer magnetodrag comparing it to the corresponding single layer magnetoresistance. In qualitative agreement with experiment we find relatively similar behavior in our calculated magnetodrag and magnetoresistance arising from the physical effects of screening being similarly modified (“suppressed”) by carrier spin polarization (at “low” field) and the conductivity effective mass being similarly modified (“enhanced”) by strong magneto-orbital correction (at “high” fields) in both cases. We critically discuss agreement and disagreement between our theory and the experimental results.

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