Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Hall effect in strongly correlated low dimensional systems GLADYS LEON, CHRISTOPHE BERTHOD, THIERRY GIAMARCHI, University of Geneva — We investigate the Hall effect in a quasi one-dimensional system made of weakly coupled Luttinger liquids at half filling. A memory function approach is used to compute the Hall resistivity (R_H) in the presence of umklapp scattering along the chains. In this approximation, the Hall resistivity decomposes into two terms linear in the magnetic field: an infinite frequency limit term and a memory function term. We investigate the case of zero umklapp scattering, where the memory function vanishes and the Hall resistivity is given by a simple formula corresponding to non-interacting fermions, in agreement with former results made on weakly coupled Luttinger Liquids in the absence of dissipation along the chains. With umklapp scattering present, we find a negative power-law correction to the free-fermion value (band value), with an exponent depending on the Luttinger parameter K_ρ. We also calculate R_H for the case of noninteracting fermions with umklapp scattering present using Feymnan diagrams to compare with the limit $K_\rho \to 1$ of the power-law result. At high enough temperature or frequency, the Hall coefficient approaches the band value R_H^0. cond-mat/0608427

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Date submitted: 20 Nov 2006 Electronic form version 1.4