

Abstract Submitted  
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**Small length-scale probes of 2D electron conduction and correlations.** ROBERT WILLETT, KEN WEST, LOREN PFEIFFER, Bell Laboratories, Lucent Technologies — An important approach to revealing correlation effects in high mobility 2D electron systems is through conduction measurements, and this is particularly true when a conduction measurement can be applied over small length-scales. Relevant but attainable significant length-scales include composite fermion mean-free-paths for the various composite particle constructions throughout the magnetic field spectrum. These length-scales are dependent upon the sample quality such that higher mobilities will typically allow a larger conductance probe to examine the correlation effects. The specific correlations will present different length-scales: composite fermion mean-free-path at filling factor  $1/2$  is substantially larger than the mean-free-path of the  $5/2$  state precursor particle at high temperatures. We will present here various probes recently used to try to access these small length scale effects. The various techniques will be reviewed and the complicating factors for these probes will be discussed, in addition to prospects for improved examination of relative small correlation energy states.

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