
Decoherence control in quantum Hall edge channels

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Abstract

The recent developments of electron quantum optics and, in particular, of single electron quantum tomography protocols based on two particle interferences has given us a new way to quantitatively probe the effect of interactions in ballistic chiral conductors down to the level of single electron excitations. In the quantum Hall edge system at filling fraction two, strong Coulomb interactions between the two channels lead to strong electronic decoherence effects. In this talk, we discuss electronic decoherence through electron/hole pair creations in a single quantum Hall edge channel and show that a careful sample design can lead to decoherence control in the quantum Hall edge channel system at filling fraction two.

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