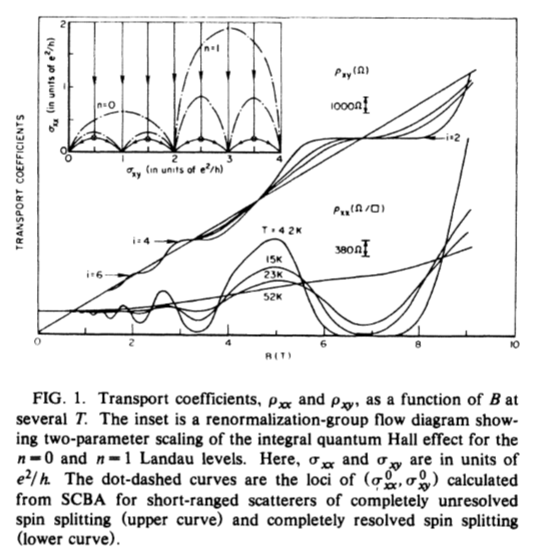
**Quantum Hall Scaling Theory**

It appears that (Tsui ‘86), the QH effect is a two parameter scaling theory: σxx, σxy. Both of these exhibit length dependence (also note that both of these quantities exhibit τ-dependence, unlike, say ρxy). Also observe that in 2D, σxx = gxx and σxy = gxy. From the NLσM, we can derive scaling functions:



RG flows are shown below (Tsui ’86) in the inset, along with ρxy, ρxx plots as a function of T.



Is inset a fixed B field, or is it including all B’s? Seems it includes all…upper part of graph where σxx > 1 or so, is associated with the weak localization regime, where ξ ~ ℓexp(kFℓ). But this formula was in absence of B field?

There is fixed point where σxx, σxy don’t change with length. There is a fixed line where σxy doesn’t change, but σxx shrinks to a the fixed point. This point is associated with extended states he says.

For σxy <,> σxy(crit), σxx will flow to zero, and σxy to lower, greater integer value. These points are associated with localized states he says.

Perhaps ρxy, ρxx steps would be more precipitous at a longer length scale? Seems rather that the broadness is due to finite T effects.

Does previous B field stuff pertain only to weak field limit, where both σxx and σxy scale to zero?

There is no mention of B in the DMPK. So all results are independent of it.