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[115] The role of many particle interactions in the integer quantum Hall effect regime

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It is widely believed that the integer quantum Hall effect (IQHE) is dominated by single-particle interaction. In a recent paper we show that quite oppositely the IQHE regime behaves similarly to a non-interacting single particle system —not because of the absence, but rather due to the dominance of many-body effects [1]. We utilize a fully self-consistent Hartree-Fock implementation and a model for electron transport close to equilibrium. Our results indicate a strong tendency to avoid the simultaneous existence of partially filled spin-up and spin-down LLs, similar to a Hund's rule for the occupation of the spin split LLs.

[1] J.Oswald, R.A. Römer, EPL 117, 57009 (2017); open access: <http://iopscience.iop.org/article/10.1209/0295-5075/117/57009>

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