Titel: Quantization of Hall conductance and a glimpse of 'edge modes' in interacting systems

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Abstract:
We review the question why conductance is quantized in interacting gapped systems. We present a streamlined version of the proof by Hastings, Michalakis (2009) covering both the integer and the fractional case.
Then, we consider a system that, far to the right and far to the left, has a different value of the Hall conductance and we prove that such a system does not admit a gap. This is hence a rigorous version of a well-known bulk-edge principle, but applying just as well in cases where the spatial transition region is not a smooth interpolation between left and right system.
Finally, we prove from first principles the validity of the linear response formalism that underlies the above discussion.
This is joint work with Sven Bachmann, Alex Bols and Martin Fraas.