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Numerical studies of domain patterns in inhomogeneous microwave-irradiated quantum Hall gas ILYA FINKLER, Harvard University, ASSA AUERBACH, Technion, BERTRAND HALPERIN, Harvard University, AMIR YACOBY, Weizmann Institute — Experimental observations of a zero conductance state in microwave-irradiated quantum Hall systems have been explained by a model which postulates the existence of domains with a non-zero dc electric field. [1] We have carried out numerical calculations to study the effects of long-range disorder on these domains and on the resulting conductivity. If the Hall conductivity is constant throughout the sample, then one can construct a Lyapunov functional, and domain wall patterns can be obtained by looking for a potential configuration which minimizes the functional. We have studied a range of examples and find that that long-range disorder can pin the domain walls, giving the state a nonzero conductance. For a spatially varying Hall conductivity, numerical calculations are more difficult, but results will be presented for simple cases. [1] A.V. Andreev, I.L. Aleiner, and A.J.Millis, PRL 91, 056803 (2003).

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