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Measuring a Butterfly with Graphene ANDRES CONCHA, Johns Hopkins University — The Hofstadter butterfly (HB) is a hierarchical structure that emerges as a consequence of the commensuration of two length scales, the magnetic length $l \sim \frac{1}{H}$ and the lattice spacing a between atomic sites. We argue that by using a set of scalar potentials and an external magnetic field it is possible to measure and manipulate the HB in graphene. Our claim is based in the fact that in graphene, close to the Dirac point the theory becomes critical and as such no length scale is present in the low energy description. Thus the only relevant length scales are dictated by the magnetic length and the distance between potential barriers. It is shown that the Hall conductance in the minigaps should be directly measurable with current available technology.

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