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# The Fate of Topological Insulators at High Electric Fields

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## Résumé

Among the few manifestations of the topological nature of matter, the quantization of the Hall conductivity of Chern insulators is particularly remarkable. It expresses that an insulator submitted to a weak electric field manifest its topological nature through the appearance of a transverse conductivity set by a topological number. This linear response property is expected to hold provided that the electric field perturbs weakly the insulator, i.e. when the work of the electric field across the sample is small compared to the energy gap. In this talk, I will discuss the fate of such a Chern insulator when submitted to a strong electric field. I will show that the topological nature of the insulator persists way beyond the expected regime of weak perturbations, and discuss the manifestations of this strong electric field topological regime.

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