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## The quantum Hall effect, the theta angle, instantons and all that

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The quantum Hall effect is an outstanding laboratory for investigating and exploring topological principles in quantum field theory in general, and the strong coupling problems in QCD in particular. In this talk I review some of the highlights and misconceptions spanning more than three decades of research on the subject. This includes the laboratory experiments on the quantum Hall “plateau transitions” as well as the emergence of new concepts such as “super-universality” of quantum Hall physics.

### Biography

Adrianus Pruisken's research interests cover the topological and non-perturbative aspects of condensed matter systems, statistical mechanics and quantum field theory. He has contributed to a variety of topics such as quantum critical phenomena, Anderson localization and interaction effects, the Coulomb blockade, the single electron transistors as well as quantum anti-ferromagnets in low dimensions. Pruisken's microscopic theory of the quantum Hall effect has played a central role in motivating a stream of experimental research on the so-called “plateau-transitions.” Although this research has spanned many years, some of its key aspects have been only recently resolved.

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