Universität Bielefeld

Fakultät für Physik & Fakultät für Mathematik

Kolloquium Mathematische Physik

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On symmetry-protected topological states: from free fermions to the Haldane phase

The Nobel-Prize winning Haldane phase of spin-1 antiferromagnetic spin chains is a paradigm for symmetry-protected topological phases. When local charge fluctuations are allowed, there has been a debate: protection by what? My answer is that there exists an adiabatic path to a free-fermion topological phase of class AIII, protected by a particle-hole symmetry. To set the stage, I will review Dysons Threefold Way and recall the Tenfold Way of disordered fermions.

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