

Mathematisches Kolloquium

Bott periodicity and the “Periodic Table” of topological insulators and superconductors

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Bott periodicity is said to be one of the most surprising phenomena in topology. Perhaps even more surprising is its recent appearance in condensed matter physics. Building on work of Schnyder et al, Kitaev argued that symmetry-protected ground states of gapped free-fermion systems, also known as topological insulators and superconductors, organize into a kind of periodic table governed by a variant of the Bott periodicity theorem. In this colloquium, I will sketch the mathematical background, the physical context, and some new results of this ongoing story of mathematical physics.