바둑판 위에서 본 양자, 위상, 얽힘

Quantum, topology, and entanglement on the lattice

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Lattice is a fundamental aspect of condensed matter physics, and it describes the arrangement of atoms in a crystal. In some crystalline structures, a special type of emergent phenomena can occur, known as topological phases of matter. The excitations in these phases of matter manifest several uncommon physical features such as long-range entanglement and robustness to disorder, making them of great interest in the field of topological quantum computation. In this colloquium, I provide a comprehensive introduction to topological phases of matter, with a particular focus on their relevance to quantum materials. Furthermore, I will discuss future directions of research in this field, including the development of new materials and techniques for creating and controlling topological excitations in solid-state systems.