XV Conference of Young Scientists "Problems of Theoretical Physics"

Contribution ID: 28

Type: Invited talk

Chosen topics in topological condensed matter

Wednesday, 11 June 2025 12:40 (40 minutes)

We will give an introduction to the use of topology as a way to understand certain condensed matter systems. To this end we choose some topics of current interest to the research community. One basic example is given by formulating the quantum Hall conductivity as a manifestation of the Gauss-Bonnet theorem. A slightly more sophisticated example that we will discuss, is the axion electrodynamics of topological materials. We will explain how the axion electrodynamics differs from ordinary textbook-level electrodynamics. The simplest version of it, applied to topological insulators, just leads to a change in the boundary conditions of the Maxwell equations.

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Session Classification: Condensed Matter and Statistical Theory of Many-body Systems

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