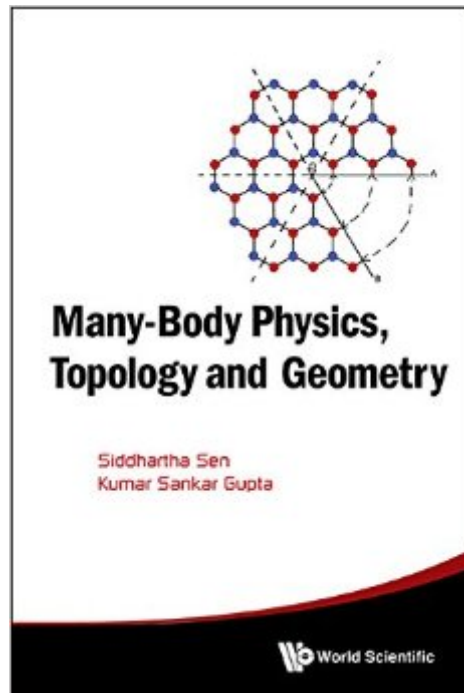


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# Many-Body Physics, Topology And Geometry



## Synopsis

The book explains concepts and ideas of mathematics and physics that are relevant for advanced students and researchers of condensed matter physics. With this aim, a brief intuitive introduction to many-body theory is given as a powerful qualitative tool for understanding complex systems. The important emergent concept of a quasiparticle is then introduced as a way to reduce a many-body problem to a single particle quantum problem. Examples of quasiparticles in graphene, superconductors, superfluids and in a topological insulator on a superconductor are discussed. The mathematical idea of self-adjoint extension, which allows short distance information to be included in an effective long distance theory through boundary conditions, is introduced through simple examples and then applied extensively to analyse and predict new physical consequences for graphene. The mathematical discipline of topology is introduced in an intuitive way and is then combined with the methods of differential geometry to show how the emergence of gapless states can be understood. Practical ways of carrying out topological calculations are described.

## Book Information

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## Customer Reviews

Terribly written, full of typos, incoherent sentences, and sketchy explanations. A true disgrace for both the authors and the publisher. It is evident that the manuscript was not proofread, not even once. It is just impossible for me to understand how can grown ups produce such garbage, and have no problem associating their names with it. I will try, for the first time in my life, to return it to the publisher as defective - will update with their answer.

This is fantastic book to learn the heavy math needed for GRAPHENE and TOPOLOGICAL INSULATORS.

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