



The Schrödinger Equation (Mathematics and its Applications)

By F. A. Berezin, M.A. Shubin

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This volume deals with those topics of mathematical physics, associated with the study of the Schrödinger equation, which are considered to be the most important.

Chapter 1 presents the basic concepts of quantum mechanics. Chapter 2 provides an introduction to the spectral theory of the one-dimensional Schrödinger equation. Chapter 3 opens with a discussion of the spectral theory of the multi-dimensional Schrödinger equation, which is a far more complex case and requires careful consideration of aspects which are trivial in the one-dimensional case. Chapter 4 presents the scattering theory for the multi-dimensional non-relativistic Schrödinger equation, and the final chapter is devoted to quantization and Feynman path integrals. These five main chapters are followed by three supplements, which present material drawn on in the various chapters. The first two supplements deal with general questions concerning the spectral theory of operators in Hilbert space, and necessary information relating to Sobolev spaces and elliptic equations. Supplement 3, which essentially stands alone, introduces the concept of the supermanifold which leads to a more natural treatment of quantization.

Although written primarily for mathematicians who wish to gain a better awareness of the physical aspects of quantum mechanics and related topics, it will also be useful for mathematical physicists who wish to become better acquainted with the mathematical formalism of quantum mechanics. Much of the material included here has been based on lectures given by the authors at Moscow State University, and this volume can also be recommended as a supplementary graduate level introduction to the spectral theory of differential operators with both discrete and continuous spectra.

This English edition is a revised, expanded version of the original Soviet publication.

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Review

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Users Review

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Edward Apodaca:

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