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Sinopsis

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Without using the customary Clifford algebras frequently studied in connection with the representations of orthogonal groups, this book gives an elementary introduction to the two-component spinor formalism for four-dimensional spaces with any signature. Some of the useful applications of four-dimensional spinors, such as Yang-Mills theory, are derived in detail using illustrative examples.

Key topics and features:

- ! Uniform treatment of the spinor formalism for four-dimensional spaces of any signature, not only the usual signature $(+ + + -)$ employed in relativity
- ! Examples taken from Riemannian geometry and special or general relativity are discussed in detail, emphasizing the usefulness of the two-component spinor formalism
- ! Exercises in each chapter
- ! The relationship of Clifford algebras and Dirac four-component spinors is established
- ! Applications of the two-component formalism, focusing mainly on general relativity, are presented in the context of actual computations

Spinors in Four-Dimensional Spaces is aimed at graduate students and researchers in mathematical and theoretical physics interested in the applications of the two-component spinor formalism in any four-dimensional vector space or Riemannian manifold with a definite or indefinite metric tensor. This systematic and self-contained book is suitable as a seminar text, a reference book, and a self-study guide.

Reviews from the author's previous book, 3-D Spinors, Spin-Weighted Functions and their Applications:

In summary_the book gathers much of what can be done with 3-D spinors in an easy-to-read, self-contained form designed for applications that will supplement many available spinor treatments. The book_should be appealing to graduate students and researchers in relativity and

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mathematical physics.

_Mathematical Reviews

The present book provides an easy-to-read and unconventional presentation of the spinor formalism for three-dimensional spaces with a definite or indefinite metric...Following a nice and descriptive introduction_the final chapter contains some applications of the formalism to general relativity.

_Monatshefte für Mathematik