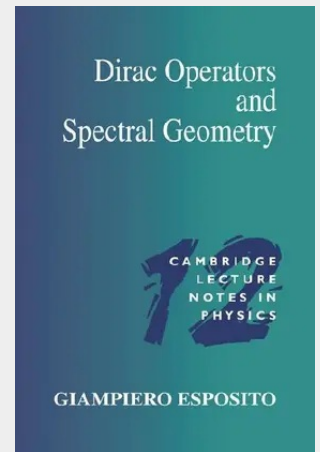


Dirac Operators and Spectral Geometry

The Dirac operator has many useful applications in theoretical physics and mathematics. This book provides a clear, concise and self-contained introduction to the global theory of the Dirac operator and to the analysis of spectral asymptotics with local or non-local boundary conditions. The theory is introduced at a level suitable for graduate students. Numerous examples are then given to illustrate the peculiar properties of the Dirac operator, and the role of boundary conditions in heat-kernel asymptotics and quantum field theory. Topics covered include the introduction of spin-structures in Riemannian and Lorentzian manifolds; applications of index theory; heat-kernel asymptotics for operators of Laplace type; quark boundary conditions; one-loop quantum cosmology; conformally covariant operators; and the role of the Dirac operator in some recent investigations of four-manifolds. This volume provides graduate students with a rigorous introduction and researchers with a valuable reference to the Dirac operator and its applications in theoretical physics.

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