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OPERATOR

6.1 Spin Structure6.2 Spinor Bundle; 6.3 Dirac Operator; 6.4 Index of Dirac Operator; CHAPTER 7 LOCAL INDEX THEOREMS; 7.1 Local Index Theorem for Dirac Operator; 7.2 Local Index Theorem for Signature Operator; 7.3 Local Index Theorem for de Rham-Hodge Operator; CHAPTER 8 RIEMANN-ROCH THEOREM; 8.1 Hermitian Metric; 8.2 Hermitian Connection; 8.3 Riemann-Roch Operator; 8.4 Weitzenbock Formula; 8.5 Index Theorem; 8.6 Riemann-Roch Operator in Complex Analysis; REFERENCES; INDEX

Sommario/riassunto

This book provides a self-contained representation of the local version of the Atiyah-Singer index theorem. It contains proofs of the Hodge theorem, the local index theorems for the Dirac operator and some first order geometric elliptic operators by using the heat equation method. The proofs are up to the standard of pure mathematics. In addition, a Chern root algorithm is introduced for proving the local index theorems, and it seems to be as efficient as other methods. Contents: Preliminaries in Riemannian Geometry; Schrodinger and Heat Operators; MP Parametrix and Applications; Chern-Weil Th