

1. Record Nr.	UNISA996499867103316
Autore	Carey Alan L.
Titolo	Index theory beyond the Fredholm case // Alan L. Carey, Galina Levitina
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	3-031-19436-5
Descrizione fisica	1 online resource (186 pages)
Collana	Lecture notes in mathematics ; ; Volume 2323
Disciplina	512.556
Soggetti	Index theory (Mathematics) Teoria de l'índex (Matemàtica) Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Acknowledgements -- Notations -- Contents -- 1 Introduction -- 1.1 Motivation and Background -- 1.2 An Overview of Recent Results -- 1.3 Discussion of the Methods and the Applications in These Notes -- 1.4 Summary of the Exposition -- 2 Double Operator Integrals -- 2.1 Double Operator Integrals in the Discrete Setting -- 2.2 Double Operator Integrals in the General Setting -- 2.3 Double Operator Integrals for Resolvent Comparable Operators -- 2.4 Continuity of Double Operator Integrals with Respect to the Operator Parameters -- 3 The Model Operator and Its Approximants -- 3.1 The Class of p -Relative Trace-Class Perturbations -- 3.2 Main Setting and Assumptions -- 4 The Spectral Shift Function -- 4.1 An Introduction to the Theory of the Spectral Shift Function -- 4.1.1 Perturbation Determinants -- 4.1.2 M. G. Krein' s Construction of the Spectral Shift Function -- 4.1.3 Properties of the Spectral Shift Function -- 4.2 More General Classes of Perturbations -- 4.2.1 Spectral Shift Function for Unitary Operators -- 4.2.2 Spectral Shift Function for Resolvent Comparable Operators -- 4.2.3 Invariance Principle -- 4.2.4 Spectral Shift Function for m -Resolvent Comparable Operators -- 4.3 Continuity of the Spectral Shift Function with Respect to the Operator Parameter -- 4.4 Representation of the Spectral Shift Function via a Regularised Perturbation Determinant -- 4.5 Spectral Shift Functions for the Pairs

(A_+, A_-), (H_2, H_1) -- 5 Spectral Flow -- 5.1 Phillips' Definition of Spectral Flow and Analytic Formulas -- 5.1.1 The Variation of eta Formula -- 5.1.2 A Review of Analytic Formulas for Spectral Flow -- 5.2 The Relation Between the Spectral Shift Function and the Spectral Flow -- 5.3 Generalised Spectral Flow -- 6 The Principal Trace Formula and Its Applications -- 6.1 A Brief History of the Principal Trace Formula. 6.2 Proving the Principal Trace Formula -- 6.3 A Generalised Pushnitski Formula -- 6.4 The Witten Index -- 6.4.1 Preliminaries -- 6.4.2 The Formula in Terms of the Spectral Shift Function -- 6.5 Cyclic Homology and Invariance -- 6.5.1 How the Witten Index Relates to This -- 6.5.2 Higher Schatten Classes -- 6.6 The Anomaly in Terms of the Spectral Shift Function -- 6.6.1 The Origin of the Notion of an 'Anomaly' -- 6.6.2 Relationship to the Spectral Shift Function -- 7 Examples -- 7.1 The Dirac Operator in \mathbb{R}^d -- 7.1.1 The Setting -- 7.1.2 Verification of Hypothesis 3.2.5 -- 7.1.3 The Index of DA -- 7.1.4 Behaviour of the Spectral Shift Function for the Massless Dirac Operator -- 7.2 A Compact One-Dimensional Example -- 7.2.1 The Setting -- 7.2.2 Spectral Shift Function of the Pair (D_+, D_-) -- 7.2.3 The Index of the Operator DA -- 7.2.4 Spectral Flow Along the path $\{D_+(t)\}_t \in \mathbb{R}$ -- 7.2.5 The Anomaly for the Operator DA -- References.
