

Contents

Preface	v
Introduction	1
0.1 Basics of Elliptic Theory	1
0.2 Surgery and the Superposition Principle	3
0.3 Examples and Applications	9
0.4 Bibliographical Remarks	16
I Superposition Principle	19
1 Superposition Principle for the Relative Index	21
1.1 Collar Spaces	21
1.2 Proper Operators and Fredholm Operators	25
1.3 Superposition Principle	29
2 Superposition Principle for K-Homology	41
2.1 Preliminaries	41
2.2 Fredholm Modules and K -Homology	46
2.3 Superposition Principle	48
2.4 Fredholm Modules and Elliptic Operators	54
3 Superposition Principle for KK-Theory	59
3.1 Preliminaries	59
3.2 Hilbert Modules, Kasparov Modules, and KK	59
3.3 Superposition Principle	61
II Examples	69
4 Elliptic Operators on Noncompact Manifolds	71
4.1 Gromov–Lawson Theorem	71
4.2 Bunke Theorem	76

4.3	Roe's Relative Index Construction	79
5	Applications to Boundary Value Problems	81
5.1	Preliminaries	81
5.2	Agranovich–Dynin Theorem	87
5.3	Agranovich Theorem	89
5.4	Bojarski Theorem and Its Generalizations	90
5.5	Boundary Value Problems with Symmetric Conormal Symbol	91
6	Spectral Flow for Families of Dirac Type Operators with Classical Boundary Conditions	93
6.1	Statement of the Problem	93
6.2	Simple Example	97
6.3	Formula for the Spectral Flow	100
6.4	Computation of the Spectral Flow for a Graphene Sheet	108
	Bibliography	109
	Index	115



<http://www.springer.com/978-3-0348-0509-4>

The Localization Problem in Index Theory of Elliptic Operators

Nazaikinskii, V.E.; Schulze, B.-W.; Sternin, B.

2014, VIII, 117 p. 38 illus., 1 illus. in color., Softcover

ISBN: 978-3-0348-0509-4

A product of Birkhäuser Basel