

Contents

Preface	vii
I Fractals	
1 Basic notation in measure theory	1
2 Hausdorff measures and Hausdorff dimensions	2
3 d -sets	5
4 Self-affine fractals	7
5 Nonisotropic d -sets	25
II ℓ_p-spaces	
6 Entropy numbers and eigenvalues	33
7 The spaces ℓ_p^M	36
8 Weighted ℓ_p -spaces	38
9 Weighted ℓ_p -spaces: a generalization	46
III Function spaces on \mathbb{R}^n	
10 The spaces B_{pq}^s and F_{pq}^s	49
11 Properties	53
12 Harmonic and local representations and characterizations	58
13 Atomic decompositions	70
14 Subatomic decompositions	89
15 A digression: Vector-valued function spaces	104
16 Graphs of functions	119
IV Function spaces on and of fractals	
17 The distributional dimension	125
18 The spaces $L_p(\Gamma)$	135
19 A second digression: Distributional cascades and iterated function systems	147
20 The spaces $\mathbb{B}_{pq}^s(\Gamma)$	158
21 Fractal limiting embeddings	173
22 Nonisotropic embeddings	179
23 The spaces $B_{pq}^s(\Omega)$	185
24 Quadratic forms and approximation numbers	189
25 Quadratic forms on fractals and in domains	192

V Spectra of fractal pseudodifferential operators

26 Introduction and preliminaries 199

27 Pseudodifferential operators with fractal coefficients 205

28 Fractal pseudodifferential operators 221

29 Fractal pseudodifferential operators: limiting cases 231

30 Fractal drums 233

31 Schrödinger operators with fractal potentials 243

32 Nonlinear elliptic equations related to fractals 251

References 260

Symbols 267

Index 269

Fractals and Spectra

Related to Fourier Analysis and Function Spaces

Triebel, H.

1997, VIII, 272 p., Softcover

ISBN: 978-3-0348-0033-4

A product of Birkhäuser Basel