

Contents

Introduction	9
1 Markov processes and pseudo-differential operators. Why?	13
A Stochastic processes, the Kolmogorov theorem, and semigroups . .	23
2 Lévy processes and the role played by their symbols	29
B The decomposition theorem of Paul Lévy	41
3 Hilbert space methods and stochastic processes: Dirichlet forms .	45
C Some properties of the spaces $H^{a^2,s}(R^n)$ and related spaces	59
4 Constructing Markov processes from pseudo-differential operators	63
D More on the martingale problem	73
5 Subordination in the sense of Bochner and some symbolic calculus	77
E Functional calculus – symbolic calculus	91
6 Global properties of semigroups and Markov processes	97
F Refinements of symmetric sub-Markovian semigroups	111
7 Comparable processes and path properties	115
G More about comparable processes	121
8 Balayage theory and the Dirichlet problem	123
H Balayage spaces	139
9 A Hilbert space approach to the Dirichlet problem	141
I Extended Dirichlet spaces	149
10 General boundary problems for generators of Feller semigroups . .	153
11 Remarks to related topics	161
12 How to get some estimates	171
Bibliography	183
Index	205