

Index

- Adapted process 24
- Adjoint process 268, 278
- Admissible control 30, 270
- Backward Ito integral 124
- Backward martingale 124, 131
- Backward process 66
- Bellman equation 227
- Best linear estimate
 - discrete time 2
 - continuous time 12
- Caratheodory 235
- Certainty equivalence principle 51
- Coercive functional 13
- Complete observation 23
- Conditional Gaussian 190, 204
- Conditional mean 205
 - variance 205
- Conditional probability 7, 74
 - unnormalized 74, 79, 205, 271
- Covariance error 17
- Duality 132, 178
- Dynamic programming 263, 268, 297
 - stationary 305
- Embedding theorems 231
- Energy equality 127, 184, 277, 278, 301
- Envelope semigroup 269
- Ergodic 137
- Extended Kalman theory 136
- Fatou's lemma 38
- Feedback 20
- Filtration 297
- Fokker-Planck equation 119, 126
- Formal adjoint 115, 147
- Forward process 66
- Fredholm's alternative 180
- Fundamental matrix 241, 250
- Gain 6
- Galerkin approximation 126
- Girsanov transformation 36, 39, 59, 222
- Gronwall's lemma 38
- Hamiltonian 227, 280
- Information
 - full 253
 - partial 253
- Innovation approach 97
- Innovation process 5, 18, 31
- Invariant measure 179
- Ito differential 165
- Ito's formula 12, 77, 83
- Jensen inequality 61, 186
- Kallianpur-Streibl formula 79
- Kalman filter 1, 30, 33
 - discrete time 4
 - continuous time 14
- Kolmogorov equation 126
- Kushner equation 194

352

Index

- Kushner-Stratonovitch equation 74, 95
- Least squares 1
 - estimate 6
- Likelihood
 - maximum 1
 - function 9
- Linear exponential Gaussian (LEG) 68, 222
- Linear quadratic gaussian (LQG) 222
- Markov process 120
- Martingale 39, 40
- Maximum element 306, 310
- Maximum principle 91, 108
- Minimum distance problem 241, 250
- Moments 103
- Non-stationary dynamic
 - programming 314
- Nonlinear filtering 74, 136
- Nonlinear semigroup 323
- Observation noise 105
- Observation process 297
- Partial information 29
- Partial observation 59
- Perturbation
 - singular 136, 177
 - regular 136, 169
- Predicted miss problem 238
- Prokhorov's criterion 335
- Radon measure 327
- Radon Nikodym derivative 37, 147
- Relaxed problem 326
- Representation formula 98, 114
- Representation theorem 287
- Riccati equation 25, 62, 65, 200
 - backward 20
- Right continuous Martingale 86
- Risk aversion 53
 - preference 55
- Robust form 75, 115, 154
- Selection theorems 253
- Semigroup envelope 305
- Separated problem 224
- Separation principle 51
- Separation principle 222, 223, 268, 292
 - approximate 261
- Signal noise 105
- Signal to noise ratio 167
- Smoothing 133
- Sobolev space 227
- Stochastic differential equation 32
 - forward 75
 - backward 75
- Stochastic flow 268
- Stochastic maximum principle 268, 276
- Strong solution 234
- Sufficient statistics 73, 195
- Utility 55
- Vague convergence 334
- Variational techniques 268
- Viscosity solution 269
- Weierstrass theorem 82
- Wide sense admissible controls 336
- Wiener process 11, 18, 23, 76, 81
- Zakai equation 74, 82, 200