Bibliography


Index

(∇), 143
GLM, 42
$M^+$, 61
$CM^+$, 61
$D'(x)$, 30
$D^0(x)$, 30
Γ-martingale, 93, 146
$k^\#(x,y)$, 122
$p$-related, 19
  reproducing kernels, 149
  reproducing kernel Hilbert space, 150
  SDE, 24
adjoint
  semi-connection, 41
along $S$
  diffusion operator, 5
  semi-martingale, 145
basic
  diffusion, 82
  sigma-algebra, 82
co-differential, 120
co-differentials, 32
cohesive, 17
descends, 26
conditional law, 75
connection, 2
  on natural bundles, 131
  adjoint, 124
  canonical, 118
  complete, 29
determined by stochastic flows, 118
Levi-Civita, 45, 118
LW, 41, 45, 118, 124, 154
partial, 13
  semi-, 13
  stochastically complete, 105
  strongly stochastically complete, 106
coupling, 142
covariant derivative
  for LW connection, 154
  from semi-connection, 35
curvature
  form, 36
  operator, 43, 58
  parallel, 113
  Ricci, 43, 46, 58
  Weitzenböck, 47, 52, 54, 58, 85, 119
damped parallel translation, 85
derivative
  flow, 45
development
  anti-, 146
  stochastic, 145
diffeomorphism
  space $D^*$, 121
differential form
  pull-back, 31
diffusion
  equivariant, 102
  measure, 61
  operator, 1
diffusion operators
  $G$-invariant, 58
diffusion operator, 108
stochastically, 108
horizontal, 9
lift of , 18
horizontal lift
map, 11, 15
of one-point motion, 127
horizontal subspace
of a semi-connection, 13
innovations process, 91
intertwined
diffusions, 66
flows, 152
Itô equation, 76, 143
Kallianpur-Striebel formula, 88
Krylov-Veretennikov formula, 74, 85
Laplacian
fractional powers, 120
Hodge-Kodaira, 119
Lie differentiation, 3
lies over
a flow, 152
LW connection, 41
covariant derivative, 154
Malliavin covariance operator
deterministic, 111
minimal fibres, 115, 116, 119
minimal submanifold, 148
mixed type SDE, 76, 144
natural bundle, 131
observations
process, 87
noise-free, 85, 99
operator
curvature, 43
diffusion, 1
semi-elliptic, 1
shape, 147
symbol, 1

distribution, 5
regular, 6
vertical, 6
Duncan-Mortensen-Zakai equation, 89
exponential martingale, 135
and explosion, 135
flow
derivative, 44, 45, 48, 83, 113
gradient, 45
holonomy, 30
of isometries, 48
of SDE, 44
on differential forms, 57
stochastic, 121, 125
frame bundle, 42
orthonormal, 117
r-th order, 131
Gauss’s formula, 147
Gradient Brownian
SDE, 45
Hörmander
condition, 109, 111, 113
form, x, 20, 23, 24, 41, 51, 55,
101, 111, 128, 144
representation, 3
Hamiltonian systems
stochastic, 58
Heisenberg group, 5, 20, 21, 39, 48
Hermann’s theorem, 103, 111, 112,
120
Hodge-Kodaira Laplacian, 119
Hodge-Kodaira-Laplacian
eigenforms, 120
holonomy
group, 36
flow, 30
group, 36
stochastic, 105
holonomy invariant
at , 108
operators
  pseudo-differential, 120
  vertical, 119

parallel translation
  stochastic, 105
  damped, 85
predictable $S^*$-valued process, 63
principal semi-connection
  on diffeomorphism bundle, 122
projectible, 116
  reproducing kernel, 149
projectible, operator, 11
pull-back, 31

redundant noise, 25, 151
representation
  linear isotropy, 117
reproducing kernel, 122, 126
  Hilbert space, 122, 126
  of SDE, 128
  projectible, 149
Riemannian
  submersion, 115

SDE
  Itô, 143
  mixed type, 76, 144
second fundamental form, 45, 147
semi-connection
  adjoint, 124
  complete, 29
  covariant derivative, 35
  induced by reproducing kernel, 123
  invariant, 34
  linear, 35
  on diffeomorphism bundle, 122, 127
  one-form, 35, 39
  principal, 34
semi-elliptic, 1
semi-groups
  $P^V, P^H$, 105
commuting, 104, 106
shape operator, 45, 147
skew-product
  decomposition of flows, 128
skew-product decomposition, 58, 81, 83
spans
  $E$, 122
stochastic flow, 142
  jets of, 132
  skew-product decomposition, 128, 129
stochastic partial differential equation, 95
submanifold
  minimal, 148
  totally geodesic, 148
submersion, 8
  Riemannian, 101, 115
symbol, 1
  projectible, 14
symmetric space, 116
  irreducible, 119
  locally, 114
totally geodesic, 120, 148
  fibres, 101, 102, 120, 152
vector field
  basic, 101
  vertical, 9
  vertical part, no, 28
Weingarten’s formula, 147
Weitzenböck curvature, 85
Wiener chaos expansion, 75