

Full Index of Notations

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${}^0\mathcal{C}$	initial condition adjusted correspondingly	272
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$\mathcal{F}_+^{\mathfrak{P}}$	the natural enlargement of a filtration	39
\widehat{F}	a predictable envelope of F .	125
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$\mathbf{H} \stackrel{\text{def}}{=} \mathbf{H} \times [0, \infty)$	the product of auxiliary space with time	177
h_0	prototypical sure Hunt function $\mathbf{y} \mapsto \mathbf{y} ^2 \wedge 1$	180
h'_0	$\mathbf{y} \mapsto \int_{\ \zeta\ \leq 1} e^{i\langle \zeta, \mathbf{y} \rangle} - 1 ^2 d\zeta$, another one	182
$\eta_{p,q}(\mathcal{I})$	a factorization constant	192
I	the identity operator or matrix	463
$\mathcal{K}[Z]$	ingredient in $\ Z\ _{\mathcal{K}^q}$	209
L^∞	the essentially bounded measurable functions	448
$L^p = L^p(\mathbb{P})$	the space of p ; \mathbb{P} -integrable functions	33
$L^0, L^0(\mathcal{F}_t, \mathbb{P})$	(classes of) measurable a.s. finite functions	33
ℓ^p	the vectors or sequences $x = (x^\nu)$ with $ x _p < \infty$	364
$\ell^0 \stackrel{\text{def}}{=} \mathbb{R}^{\mathbb{N}}$	the Fréchet space of scalar sequences	364
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$\mathfrak{M}^*[\mathcal{E}]$	the σ -additive measures on \mathcal{E}	406
$\mathfrak{M}^\bullet(E)$	the order-continuous measures on $C_b(E)$	421
$\text{mesh}(\mathcal{S})$	the mesh of a random partition	138
M^g	the martingale $M^g = \mathbb{E}[g \mathcal{F}_\cdot]$	72
$\ \cdot\ _M$	a Picard norm on paths	274
$\underline{m}[f] = \underline{m}[f; \xi']$	local constant for a single-step method ξ'	281
μ_Z	the Doléans–Dade measure of Z	222
$N(0, t)$	the law “normal zero- t ”	419
\mathcal{O}	σ -algebra of optional or well-measurable sets	440
$O(\cdot), o(\cdot)$	big O and little o	388
$(\Omega, \mathcal{F}_\cdot)$	the underlying filtered measurable space	21

ϖ	the typical point (s, ω) of $\mathbb{R}_+ \times \Omega$	22
\mathbb{P}	the pertinent probability on (Ω, \mathcal{F})	3
\mathfrak{P}	the pertinent probabilities	32
$\mathfrak{P}[Z]$	the probabilities for which Z is an L^0 -integrator	61
\mathcal{P}_{00}	the bdd. predictable processes with bdd. carrier	128
\mathcal{P}_b	the bounded predictable processes	135
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$\mathfrak{P}^\bullet(E) = \mathfrak{M}_{1,+}^\bullet(E)$	the order-continuous probabilities on E	421
$p^\diamond = p^\diamond[Z]$	p if Z jumps, 2 otherwise	238
$1^\diamond = 1^\diamond[Z]$	2 if Z is a martingale, 1 otherwise	238
$\mathcal{P} = \mathcal{P}[\mathcal{F}.]$	the predictable processes or σ -algebra	115
$\mathcal{P}^\mathbb{P}$	the processes previsible with \mathbb{P}	118
\mathbb{P}_t	the restriction of \mathbb{P} to \mathcal{F}_t	40
\mathbb{Q}	the rationals	363
\mathbb{Q}^t	$\stackrel{\text{def}}{=} \{q \in \mathbb{Q} : 0 \leq q < t\} \cup \{t\}$	26
\mathbb{R}	the reals	363
\mathbb{R}_+	the positive reals, i.e., the reals ≥ 0	363
\mathbb{R}_*^d	punctured d -space $\mathbb{R}^d \setminus \{0\}$	363
$\overline{\mathbb{R}}$	the extended reals $\{-\infty\} \cup \mathbb{R} \cup \{\infty\}$	363
$R^l F[u; v]$	Taylor Remainder of degree l of F as $v \rightarrow u$	305
$\bar{\rho}(r, s)$	the arctan metric on $\overline{\mathbb{R}}$	364
\mathcal{S}	Schwartz space of C^∞ -functions of fast decay	269
sgn	$\text{sgn } z = 1, 0, -1$ according as $z > 0, = 0, < 0$	388
sign	$\text{sign } x = 1, -1$ according as $x \geq 0, < 0$	330
\mathfrak{s}_M	Banach space of paths with $\ \cdot \ _M < \infty$	275
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$\sigma[Z]$	continuous square function of Z	148
$\sigma(C_b^*(E), C_b(E))$	the topology of weak convergence of measures	421
$T^l F[u]$	Taylor polynomial of degree l of F at u	305
$\mathfrak{T} = \mathfrak{T}[\mathcal{F}.]$	the \mathcal{F} .-stopping times	27
$T^\bullet : \lambda \mapsto T^\lambda$	THE time transformation for Z	239
$T_{p,q}(\cdot)$	type of a map or space	461
$\mathcal{U} = U_\alpha(C_0(E))$	the range of the resolvent operators	463
V^μ	the Doléans–Dade process of μ	222
$\Lambda^{\langle q \rangle}[Z]$	a previsible fin. var. process controlling Z	245
$\Lambda^{\langle q \rangle}[\zeta]$	a previsible controller	251

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\mathbb{W}	Wiener measure	16
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$\xi^f(x) = \xi(x, \cdot; f)$	the flow generated by f	278
$\mathbb{I} \ \cdot\ _{L^p(\mathbb{P})}^*$	the corresponding mean	452
$Z_\cdot(\omega)$	the path $s \mapsto Z_s(\omega)$	23
Z_s	the function $\omega \mapsto Z(s, \omega)$	23
$\zeta^T = \mathbb{I}[0, T]\zeta$	the random measure ζ stopped at T	173
$\zeta[X]$	lifetime of the solution X	273

Symbols

$\ \cdot\ _{E \rightarrow S}$	the operator norm $\sup\{\ Te\ _S : \ e\ _E \leq 1\}$	388
$1_A = A$	the indicator function of A	365
$\Phi[\mu] = \mu \circ \Phi^{-1}$	the image of the measure μ under Φ	405
$\mu \star \nu$	the convolution of μ and ν	413
\mathcal{V}^*	dual of the topological vector space \mathcal{V}	381
$X \star Z$	the indefinite Itô integral	133
Z^*	the maximal process of Z	26
ϕ^*, μ^*	ϕ, μ reflected through the origin	410
\mathcal{E}^*	the universal completion of \mathcal{E}	407
$\ \cdot\ _{BMO}$	the Mean Oscillation Norm	210
A^c	the complement of A	373
$\hat{\mu}^\Gamma$	the characteristic function of μ for Γ	410
$\binom{p}{\nu}$	p choose $\nu = p(p-1) \cdots (p-\nu+1)/\nu!$	388
\emptyset	the empty set	364
ϵ	denoting measurability, as in $f \in \mathcal{F}/\mathcal{G}$	391
ϵ	“is member of” or “is measurable on”	23
\doteq	denoting equality almost surely or of classes	32
$=$	denotes near equality and indistinguishability	35
\mathcal{F}_+	the positive elements of \mathcal{F}	363
\mathcal{F}_δ	the intersections of countable subfamilies of \mathcal{F}	432
$[r]$	the largest integer n with $n \leq r$	79
\mathcal{F}_σ	the unions of countable subfamilies of \mathcal{F}	432
$\mathcal{F}_{\sigma\delta}$	the intersections of countable subfamilies of \mathcal{F}_σ	432
\mathcal{G}	the open sets of the topological space at hand	441
\mathcal{G}_δ	the intersections of countable subfamilies of \mathcal{G}	441
\mathcal{K}	the compact sets of the topological space at hand	441
\mathcal{K}_σ	the unions of countable subfamilies of \mathcal{K}	441
$\int X dZ$	the elementary integral	47
$\int \mathbf{X} d\mathbf{Z}$	the elementary integral for vectors	56

$\int X dZ$	the (extended or Itô) stochastic integral	99
$\int X dZ$	the (extended) stochastic integral revisited	134
$\int_A F = \int A \cdot F$	the integral over the set A of the function F	105
$\int \mathbf{X} dZ$	the (extended or Itô) integral for vectors	110
$\int \mathbf{X} dZ$	the (extended) stochastic integral for vectors	134
$\int_0^T \mathbf{X} dZ$	its value at $T \in \mathfrak{T}$	134
$\mathbf{X} * \mathbf{Z}$	the indefinite Itô integral for vectors	134
$\int X \delta Z$	the Stratonovich integral	169
$X \circ Z$	the indefinite Stratonovich integral	169
$\int_0^T G dZ$	$\int_0^T G dZ \stackrel{\text{def}}{=} \int G dZ^T$	131
$\int_{S^+}^T G dZ$	$\int_0^T G \cdot ((S, \infty)) dZ$	131
J_Z	the jump measure of Z	181
$H * J_Z$	the indefinite integral of H against jump measure	181
M_∞	the limit of the martingale M at infinity	75
$\ \cdot \ _p = \ \cdot \ _{\ell^p}$	$\ x\ _p \stackrel{\text{def}}{=} (\sum_\nu x^\nu ^p)^{1/p}$, $0 < p < \infty$	364
$\ \cdot \ _\infty = \ \cdot \ _{\ell^\infty}$	$\ x\ _\infty \stackrel{\text{def}}{=} \sup_\nu x^\nu $	364
$\ \cdot \ $	any of the norms $\ \cdot \ _p$ on \mathbb{R}^n	364
$\langle \mathbf{x} \mathbf{y} \rangle$	the inner product of vectors \mathbf{x} and \mathbf{y}	238
$\ \cdot \ _{\infty p}$	$\ \mathbf{F}\ _{\infty p} \stackrel{\text{def}}{=} (\sum_\nu (\sup_\eta F_\eta^\nu)^p)^{1/p}$	283
$\wedge \& \vee$	$a \vee b$ & $a \wedge b$: smaller & larger of a, b	364
\bigvee	$\bigvee \mathcal{F}$ = supremum or span of the family \mathcal{F}	22
\wedge	$a \wedge b$ is the minimum of a and b	14
$\ \cdot \ _E$	the quasinorm on the quasinormed space E	381
$\ \cdot \ _{\mathcal{E}}$	the sup-norm on the space \mathcal{E} of functions	188
$\ \mathcal{I}\ = \ \mathcal{I}\ _{L(E,F)}$	$= \sup\{\ \mathcal{I}(x)\ _F : x \in E, \ x\ _E \leq 1\}$	381
$\ u\ = \ u\ _{L(E,F)}$	$= \sup\{\ u(x)\ _F : x \in E, \ x\ _E \leq 1\}$	381
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$\ \cdot \ _{BMO}$	$= \ \cdot \ _{\mathcal{K}^\infty}$	210
$\ f\ _p = \ f\ _{L^p(\mathbb{P})}$	$\stackrel{\text{def}}{=} (\int f ^p d\mathbb{P})^{1/p}$	33
$\ f\ _p^* = \ f\ _{p;\mathbb{P}}^*$	its mean $\ f\ _{L^p(\mathbb{P})}^* \stackrel{\text{def}}{=} (\int^* f ^p d\mathbb{P})^{1/p}$	452
$\ \cdot \ _{Z-p}$	the semivariation for $\ \cdot \ _p$	53
$\ \cdot \ _{Z-p}^*$	the Daniell extension of $\ \cdot \ _{Z-p}$	88
$\ f\ _p = \ f\ _{L^p(\mathbb{P})}$	$= \ f\ _{L^p(\mathbb{P})} \stackrel{\text{def}}{=} (\int f ^p d\mathbb{P})^{1/p \wedge 1}$	33
$\ f\ _p^* = \ f\ _{p;\mathbb{P}}^*$	its mean $\ f\ _{L^p(\mathbb{P})}^* \stackrel{\text{def}}{=} (\int^* f ^p d\mathbb{P})^{1/p \wedge 1}$	452
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$\{\zeta^{h,t}\}_{\mathcal{I}^p} = \{\zeta^{h,t}\}_{\mathcal{I}^p[\mathbb{P}]}$	integrator (quasi)norms of the random measure ζ	173
$\ \cdot \ _{Z-p}^* = \ \cdot \ _{Z-p;\mathbb{P}}^*$	THE Daniell mean	88

$\ Z\ _{\mathcal{I}^p} = \ Z\ _{\mathcal{I}^p(\mathbb{P})}$	$\stackrel{\text{def}}{=} \sup \{ \ \int X dZ \ _{L^p(\mathbb{P})} : X \in \mathcal{E}, X \leq 1 \}$	55
$\ Z\ _{\mathcal{I}^p}^* = \ Z\ _{\mathcal{I}^p(\mathbb{P})}^*$	$\stackrel{\text{def}}{=} \sup \{ \ \int \mathbf{X} d\mathbf{Z} \ _{L^p(\mathbb{P})} : \mathbf{X} \in \mathcal{E}, \mathbf{X} \leq 1 \}$	56
$\ f\ _0 = \ f\ _{0;\mathbb{P}}$	the metric $\inf \{ \lambda : \mathbb{P}[f \geq \lambda] \leq \lambda \}$ on L^0	34
$\ \ _{[\alpha]}$	$\ f\ _{[\alpha]} \stackrel{\text{def}}{=} \inf \{ \lambda > 0 : \mathbb{P}[f > \lambda] \leq \alpha \}$	34
$\ \ _{[\alpha]}^*$	the corresponding mean	452
$\ \ _{Z-[\alpha]}$	the corresponding semivariation	53
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$\tilde{\mathcal{S}}Z \& {}^lZ$	small-jump martingale part & large-jump part of Z	237
$\hat{v}Z$	a continuous finite variation part of Z	237
pZ	the part of Z supported on a sparse previsible set	235
qZ	the quasi-left-continuous rest $Z - {}^pZ$	235
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$[Y, Z], \mathcal{C}[Y, Z] \& {}^j[Y, Z]$	square bracket, its continuous & jump parts	150
$\mathcal{C}[Y, Z]$	continuous part of the square bracket	150
${}^j[Y, Z]$	jump part of the square bracket	150
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$\sigma(\mathcal{V}, \mathcal{M})$	topology generated on \mathcal{V} by the functions \mathcal{M}	381
$Z^{\mathcal{S}}$	the \mathcal{S} -scalæfication of Z	139
$[Z, Z]$	the square bracket of Z	148
$\mathcal{C}[Z, Z], {}^j[Z, Z]$	its continuous & jump parts	148
${}^j[Z, Z]$	the jump part of the square bracket of Z	148
$\llbracket T \rrbracket = \llbracket T, T \rrbracket$	the graph of the stopping time T	28
$X_{.-} \& X_{.+}$	left- & right-continuous version of X	24
$X_{.+}$	the right-continuous version of X	24
$\ z\ , \ \mu\ $	variation of distribution function z , or measure μ	45
$\ dz\ = dz $	the variation measure of the measure dz	45
$\widetilde{\mathcal{J}}Z \& \widetilde{\mathcal{J}}Z$	compensator & compensatrix of jump measure	232
$\widetilde{\mathcal{J}}Z$	compensated part of the jump measure	232
\dot{f}	the equivalence class of f mod negligible functions	13

$Z^{[\nu]}$	the higher order brackets	239
$Z^{(\rho)}$	higher order previsible brackets	240
$Z_\infty = Z_{\infty-}$	the limit (possibly $\pm\infty$) of Z at ∞	27
\ll	denoting absolute continuity	407
$\ll.$ & $\approx.$	local absolute continuity & local equivalence	40
$\approx.$	denoting local equivalence	40
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