Contents

Frequently Used Notations

a.e.	almost every
$\rightharpoonup$	weak convergence (in the sense of functional analysis)
I_A	indicator function for the set A
$\mathbb{N}$	set of strictly positive integers
$\mathbb{R}$	set of real numbers
Λ	Lebesgue measure on the interval $[0, T]$
$(\Omega, \mathcal{F}, P)$	complete probability space
EX	mathematical expectation of the random variable X
$(\mathcal{F}_t)_{t\in[0,T]}$	right continuous filtration such that $\mathcal{F}_0$ contains all $\mathcal{F}$-null sets
V^*	dual space of the reflexive Banach space V
$\langle v^*, v\rangle$	the application of $v^* \in V^*$ on $v \in V$
J	duality map $\mathrm{J} : V \to V^*$
$B(V)$	σ-algebra of all Borel measurable sets of V
$C([0, T], V)$	space of all continuous functions $u : [0, T] \to V$
$\mathcal{L}(V)$	space of all linear and continuous operators from the Banach space V to itself
$\mathcal{L}^2_V[0, T]$	space of all $B([0, T])$-measurable functions $u : [0, T] \to V$ with $\int_0^T \|u(t)\|^2_V dt < \infty$
$\mathcal{L}^2_V(\Omega)$	space of all $\mathcal{F}$-measurable random variables $u : \Omega \to V$ with $E\|u\|^2_V < \infty$
$\mathcal{L}^2_V(\Omega \times [0, T])$	space of all $\mathcal{F} \times B([0, T])$-measurable processes $u : \Omega \times [0, T] \to V$ that are adapted to the filtration $(\mathcal{F}_t)_{t\in[0,T]}$ and $E\int_0^T \|u(t)\|^2_V dt < \infty$
$\mathcal{L}^\infty_V(\Omega \times [0, T])$	space of all $\mathcal{F} \times B([0, T])$-measurable processes $u : \Omega \times [0, T] \to V$ that are adapted to the filtration $(\mathcal{F}_t)_{t\in[0,T]}$ and for a.e. (ω, t) bounded
$\mathcal{L}^\infty_V(\Omega)$	space of all $\mathcal{F}$-measurable processes $u : \Omega \to V$ that are bounded for a.e. ω
$\mathcal{D}_V(\Omega \times [0, T])$	set of $\xi \in \mathcal{L}^\infty_V(\Omega \times [0, T])$ with $\xi = v\phi, v \in V, \phi \in \mathcal{L}^\infty_{\mathbb{R}}(\Omega \times [0, T])$
$\mathcal{D}_V(\Omega)$	set of $\xi \in \mathcal{L}^\infty_V(\Omega)$ with $\xi = v\phi, v \in V, \phi \in \mathcal{L}^\infty_{\mathbb{R}}(\Omega)$

$\Delta_X(t)$	notation for $\exp\Big\{-\dfrac{b}{\nu}\int\limits_0^t \|X(s)\|_V^2\,ds\Big\}$, where $\Big(X(t)\Big)_{t\in[0,T]}$ is a V-valued stochastic process; b, ν are positive constants
$\mathcal{T}_M^X$	stopping time for the stochastic process $\Big(X(t)\Big)_{t\in[0,T]}$ (for the exact definition see Appendix B)
Π_n	orthogonal projection in a Hilbert space

As usual in the notation of random variables or stochastic processes we generally omit the dependence of $\omega \in \Omega$.