Glossary of Notations

$\mathbb{R}_+$, $\mathbb{R}$, $\mathbb{C}$	positive, real, and complex numbers
$\mathfrak{Im}(z)$	imaginary part of a complex number z
$\mathfrak{Re}(z)$	real part of a complex number z
$\mathbf{1}_A(x)$	indicator function of a set A
$Q_n(x)$	Appell polynomial of order n
$a \wedge b$	minimum of two real numbers a and b
X	real valued Lévy process
X_{t-}	left limit of X at time t
$\widehat{X}$	dual process $(= -X)$
$\Delta, \Delta X$	jump process of X
Ω	space right-continuous path having limits to the left
$\mathcal{F}_t$	$\mathbb{P}-$ complete sigma-field generated by $(X_s, s \leq t)$
H, $\widehat{H}$	ascending, descending ladder height processes
$\mathbb{P}, \mathbb{P}_0$	law of the Lévy process started at 0
$\mathbb{P}_x$	law of the Lévy process started at $x \in \mathbb{R}$
$\mathbb{P}^\nu$	Esscher transform defined by $\frac{d\mathbb{P}^\nu}{d\mathbb{P}}\Big\|_{\mathcal{F}_t} = \frac{e^{\nu X_t}}{\mathbb{E}(e^{\nu X_t})}$ for $t \geq 0$
$\mathbb{E}$, $\mathbb{E}_x$	expectation operators associated with $\mathbb{P}$, $\mathbb{P}_x$
$\mathbb{E}^\nu$, $\mathbb{E}^\nu_x$	expectation operators associated with $\mathbb{P}^\nu$, $\mathbb{P}^\nu_x$
d	drift coefficient of a bounded variation Lévy process
δ_x	Dirac unit mass at a point x
σ_b^-, τ_b^-	first exit time of X below a boundary b
σ_b^+, τ_b^+	first exit time of X above a boundary b
Π	Lévy measure of the jump process ΔX
$\overline{\Pi}^-$, $\overline{\Pi}^+$	lower, upper tails of the Lévy measure
$\nu(dx, dt)$	Poisson random measure
$\mathcal{L}_X$	infinitesimal generator of X
$\mathbf{e}_q$	exponential time of parameter q, independent of X

$\underline{X}_t$, $\overline{X}_t$	infimum, supremum processes
$\Psi(\lambda)$	characteristic exponent of a Lévy process
$\kappa(\lambda)$	Laplace exponent of a Lévy process
$\Phi(\alpha)$	the largest root of the equation $\kappa(p) = \alpha$
$\kappa(\alpha, \beta)$,$\widehat{\kappa}(\alpha, \beta)$	Laplace exponents of ascending, descending ladder process
$\Psi_q^{(-)}(\lambda)$, $\Psi_q^{(+)}(\lambda)$	Fourier transforms of the law of $\underline{X}_{\mathbf{e}_q}$, $\overline{X}_{\mathbf{e}_q}$
$\kappa_q^{(-)}(\lambda)$, $\kappa_q^{(+)}(\lambda)$	Laplace transforms of the law of $\underline{X}_{\mathbf{e}_q}$, $\overline{X}_{\mathbf{e}_q}$
$W^{(q)}(x)$	scale function under measure $\mathbb{P}$
$W_\nu^{(q)}(x)$	scale function under measure $\mathbb{P}^\nu$
$G(x)$	payoff function of an optimal stopping problem (OSP)
$V(x)$, $V(t, x)$	optimal value function of a perpetual, finite maturity OSP
$V_y(x)$, $V(x; y)$	candidate solution of a perpetual OSP
$\mathscr{P}_G^{(q)}(x)$	a function for which we have for a given $q \geq 0$ and payoff G that $\mathbb{E}\big(\mathscr{P}_G^{(q)}\big(x + \underline{X}_{\mathbf{e}_q}\big)\big) = G(x)$
$\mathscr{C}_G^{(q)}(x)$	a function for which we have for a given $q \geq 0$ and payoff G that $\mathbb{E}\big(\mathscr{C}_G^{(q)}\big(x + \overline{X}_{\mathbf{e}_q}\big)\big) = G(x)$
$\mathscr{R}$	class of sufficiently regular functions
L^b	local time-space on a curve boundary b