1D Rad Abs (solution)

Green's function

$$
\begin{aligned}
v(z,t|z',t'=0) &= 2\sum_{n=0}^{\infty} e^{-D_1\alpha_n^2 t}\frac{F_n(z')F_n(z)}{h+(\alpha_n^2+h^2)L},\\
h &= k_+/D_1,\\
F_n(z) &= h\sin\alpha_n z + \alpha_n\cos\alpha_n z,\\
\tan\alpha_n L &= -\alpha_n/h.
\end{aligned}
$$

Survival probability

$$
S_z(t) = \int_0^L v dz = 2\sum_{n=0}^{\infty} e^{-D_1\alpha_n^2 t}\frac{F_n(z')[h^2-(\alpha_n^2+h^2)\cos(\alpha_n L)]/h\alpha_n}{h+(\alpha_n^2+h^2)L}.
$$

Propensity function

$$
q_{z=0}(t) = k_+ v|_{z=0} = 2hD_1\sum_{n=0}^{\infty} e^{-D_1\alpha_n^2 t}\frac{F_n(z')\alpha_n}{h+(\alpha_n^2+h^2)L},
$$

$$
\begin{aligned}
q_{z=L}(t) = &-D_1\frac{\partial v}{\partial z}\bigg|_{z=L}\\
&= -2D_1\sum_{n=0}^{\infty} e^{-D_1\alpha_n^2 t}\frac{F_n(z')(\alpha_n^3/h+h\alpha_n)\cos(\alpha_n L)}{h+(\alpha_n^2+h^2)L}.
\end{aligned}
$$

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