Exact solution $u(x,t) = x^\beta e^{-\lambda x - t}/\Gamma(1+\beta)$ vs Crank-Nicolson solution (extrapolated) to

$$\partial_t p(x,t) = a(x)\mathbb{D}_x^{\alpha,\lambda} p(x,t) + c(x,t)$$

on $0 < x < 1$ with $\alpha = 1,6$, $\lambda = 2$, $\beta = 2.8$, $p(x,0) = x^\beta e^{-\lambda x}/\Gamma(\beta+1)$, $p(0,t) = 0$, $p(1,t) = e^{-\lambda - t}/\Gamma(\beta+1)$, $a(x) = x^\alpha \Gamma(1+\beta-\alpha)/\Gamma(\beta+1)$, and $c(x,t) = c_1(x,t)e^{-\lambda x - t}\Gamma(1+\beta-\alpha)/\Gamma(\beta+1)$ where

$$c_1(x,t) = \frac{(1-\alpha)\lambda^\alpha x^{\alpha+\beta}}{\Gamma(\beta+1)} + \frac{\alpha\beta\lambda^{\alpha-1}x^{\alpha+\beta-1}}{\Gamma(\beta)} - \frac{2x^\beta}{\Gamma(1+\beta-\alpha)}.$$

Δt	Δx	CN Error	Rate	RE Error	Rate
1/10	1/50	7.7738×10^{-5}	–	2.8514×10^{-6}	–
1/20	1/100	3.8353×10^{-5}	2.03	7.2120×10^{-7}	3.95
1/40	1/200	1.9055×10^{-5}	2.01	1.8157×10^{-7}	3.97

Question: Is this solution unique?