

$$\begin{aligned} \frac{1}{2}S^2\sigma^2\frac{\partial^2\mathcal{C}}{\partial S^2} + \frac{\partial\mathcal{C}}{\partial t} + rS\frac{\partial\mathcal{C}}{\partial S} - r\mathcal{C} + \frac{1}{2}\delta^2\sigma^2\frac{\partial^2\mathcal{C}}{\partial\sigma^2} + \rho\sigma^2\delta S\frac{\partial^2\mathcal{C}}{\partial S\partial\sigma} + (a(\theta - \sigma^2) - \omega\sigma^2)\frac{\partial\mathcal{C}}{\partial\sigma} \\ - kS\sqrt{\frac{2}{\pi dt}}\sqrt{\sigma^2S^2\left(\frac{\partial^2\mathcal{C}}{\partial S^2}\right)^2 + 2\rho\delta\sigma^2S\frac{\partial^2\mathcal{C}}{\partial S^2}\frac{\partial^2\mathcal{C}}{\partial S\partial\sigma} + \delta^2\sigma^2\left(\frac{\partial^2\mathcal{C}}{\partial S\partial\sigma}\right)^2} = 0 \end{aligned}$$