

$$\begin{aligned}\frac{\delta\phi}{\delta t} &= B\frac{\delta\phi}{\delta x} + D\frac{\delta^2\phi}{\delta x^2} \\ \frac{\phi_x^{t+1} - \phi_x^t}{\Delta t} &= B\frac{\phi_{x+1}^t - \phi_x^t}{\Delta x} + D\frac{(\phi_{x+1}^t - \phi_x^t) - (\phi_x^t - \phi_{x-1}^t)}{(\Delta x)^2} \\ \phi_x^{t+1} - \phi_x^t &= B\frac{\Delta t}{\Delta x}(\phi_{x+1}^t - \phi_x^t) + D\frac{\Delta t}{(\Delta x)^2}((\phi_{x+1}^t - \phi_x^t) - (\phi_x^t - \phi_{x-1}^t)) \\ \phi_x^{t+1} &= B\frac{\Delta t}{\Delta x}(\phi_{x+1}^t - \phi_x^t) + D\frac{\Delta t}{(\Delta x)^2}(\phi_{x+1}^t - 2\phi_x^t + \phi_{x-1}^t) + \phi_x^t\end{aligned}$$