

CN 3D growth rate

$$G^{n+1} - G^n = \frac{C}{2} G^{n+1} [3e^{-ik\Delta x} + 3e^{ik\Delta x} - 6] \\ + \frac{C}{2} G^n [3e^{-ik\Delta x} + 3e^{ik\Delta x} - 6]$$

$$G^{n+1} \left(1 - \frac{C}{2} (3 \cdot 2 \cos(k\Delta x) - 6)\right) \\ = G^n \left(1 + \frac{C}{2} (3 \cdot 2 \cos(k\Delta x) - 6)\right)$$

$$\frac{G^{n+1}}{G^n} = \frac{1 + 3C(\cos(k\Delta x) - 1)}{1 - 3C(\cos(k\Delta x) - 1)}$$

rate goes from 1 to  $\boxed{\frac{1-6C}{1+6C}}$ , bounded by -1, 1 as usual.