



$$\begin{array}{ccccccc}
\psi(t) & \times & \text{Fourier extension} & \times & \text{DFT + Evolution + IDFT} & \times & \text{Discard extension} = \psi(t) \times \text{Evolution operator} = \psi(t + \Delta t) \\
\\
\begin{array}{c} \text{\scriptsize $N + 2 \cdot N_{\text{ghost}}$} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize 1} \end{array} & \times & \begin{array}{c} \text{\scriptsize $N + 2 \cdot N_{\text{ghost}} + N_{\text{ext}}$} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize $N + 2 \cdot N_{\text{ghost}}$} \end{array} & \times & \begin{array}{c} \text{\scriptsize $N + 2 \cdot N_{\text{ghost}} + N_{\text{ext}}$} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize $N + 2 \cdot N_{\text{ghost}} + N_{\text{ext}}$} \end{array} & \times & \begin{array}{c} \text{\scriptsize N} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize $N + 2 \cdot N_{\text{ghost}} + N_{\text{ext}}$} \end{array} \\
\\
= & \begin{array}{c} \text{\scriptsize $N + 2 \cdot N_{\text{ghost}}$} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize 1} \end{array} & \times & \begin{array}{c} \text{\scriptsize N} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize $N + 2 \cdot N_{\text{ghost}}$} \end{array} & = & \begin{array}{c} \text{\scriptsize N} \\ \updownarrow \\ \left[\begin{array}{c} \\ \\ \\ \end{array} \right] \\ \text{\scriptsize 1} \end{array}
\end{array}$$