

# Nonlinear superposition via dressing

w/ Bernard Deconinck

$$\begin{array}{c}
 \begin{array}{c}
 \left[ \begin{array}{cc} 1 - |\rho|^2 & -\bar{\rho} \\ \rho & 1 \end{array} \right] \\
 \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{10em}} \bullet \text{---} \\ -L \hspace{10em} L \end{array}
 \end{array} \\
 + \\
 \begin{array}{cc}
 \begin{array}{c}
 \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] & \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] \\
 \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ -b_2 \hspace{1em} -a_2 \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ -b_1 \hspace{1em} -a_1 \end{array}
 \end{array} & \begin{array}{cc}
 \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] & \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] \\
 \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ a_1 \hspace{1em} b_1 \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ a_2 \hspace{1em} b_2 \end{array}
 \end{array}
 \end{array} \\
 = \\
 \begin{array}{c}
 \begin{array}{c}
 \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] & \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] & \left[ \begin{array}{cc} 1 - |\rho|^2 & -\bar{\rho} \\ \rho & 1 \end{array} \right] & \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] & \left[ \begin{array}{cc} 0 & -1 \\ 1 & 0 \end{array} \right] \\
 \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ -b_2 \hspace{1em} -a_2 \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ -b_1 \hspace{1em} -a_1 \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{10em}} \bullet \text{---} \\ -L \hspace{10em} L \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ a_1 \hspace{1em} b_1 \end{array} & \begin{array}{c} \text{---} \bullet \xrightarrow{\hspace{1em}} \bullet \text{---} \\ a_2 \hspace{1em} b_2 \end{array}
 \end{array}
 \end{array}
 \end{array}$$

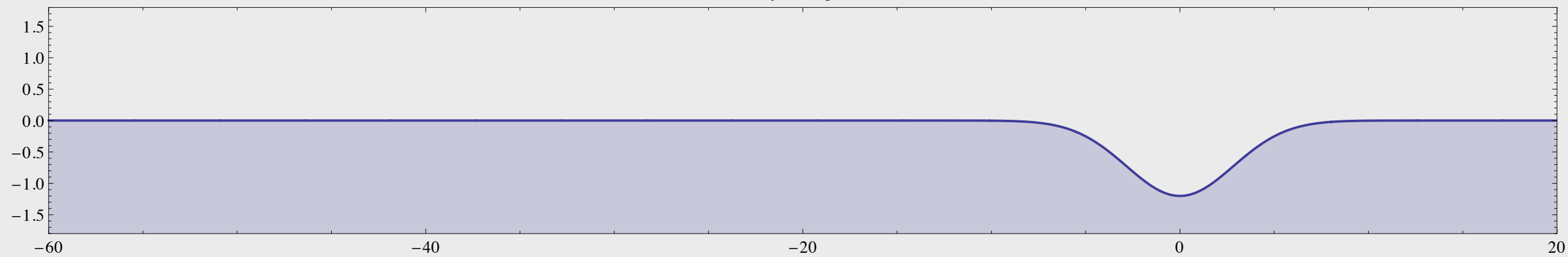


$$\begin{bmatrix} 1 - |\rho|^2 & -\bar{\rho} \\ \rho & 1 \end{bmatrix}$$

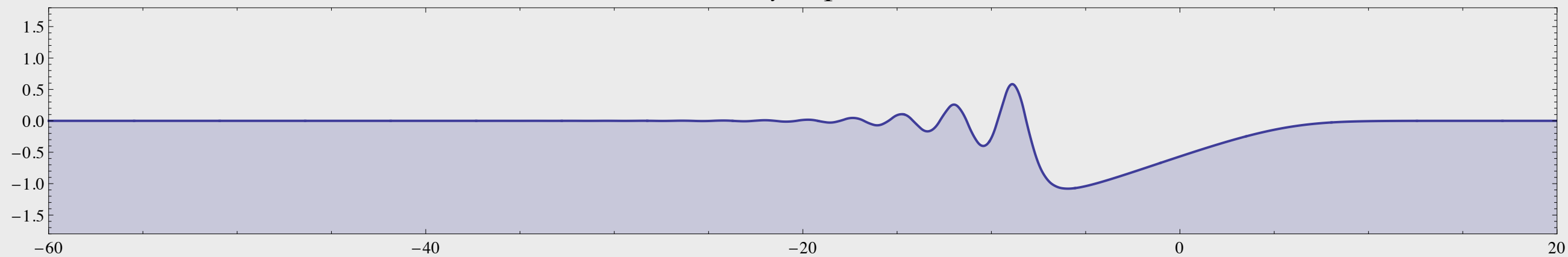
$-L$

$L$

$t = 0$



$t = 1$



$t = 3$

