

$$\left[\begin{array}{ccccccc}
 \frac{\hbar^2 (k - 2G_0)^2}{2m} - E & U_{G_0} & U_{2G_0} & & & & \\
 U_{-G_0} & \frac{\hbar^2 (k - G_0)^2}{2m} - E & U_{G_0} & U_{2G_0} & & & \\
 U_{-2G_0} & U_{-G_0} & \frac{\hbar^2 k^2}{2m} - E & U_{G_0} & U_{2G_0} & & \\
 & U_{-2G_0} & U_{-G_0} & \frac{\hbar^2 (k + G_0)^2}{2m} - E & U_{G_0} & U_{2G_0} & \\
 & & U_{-2G_0} & U_{-G_0} & \frac{\hbar^2 (k + 2G_0)^2}{2m} - E & U_{G_0} & \\
 & & & & & \ddots &
 \end{array} \right] \begin{bmatrix} \vdots \\ C_{k+2G_0} \\ C_{k+G_0} \\ C_k \\ C_{k-G_0} \\ C_{k-2G_0} \\ \vdots \end{bmatrix} = 0$$