Boundary Conditions

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For the Boundary condition on V:

$$
\begin{align}
V(+1) &= \partial_x \psi(+1) = nkBTOP \cdot \widetilde{\psi_n} \tag{1}\\
&= 1 \tag{2}\\
V(-1) &= \partial_x \psi(-1) = nkBBOT \cdot \widetilde{\psi_n} \tag{3}\\
&= -1 \tag{4}\\
BTOP_m &= (1)^m \tag{5}\\
BBOT_m &= (-1)^m \tag{6}
\end{align}
$$

for each Fourier mode.

For the Boundary condition on U:

$$
\begin{align}
U(+1) &= -\partial_y \psi(+1) = KTOP \cdot \widetilde{\psi_n} \tag{7}\\
&= 1 \tag{8}\\
U(-1) &= -\partial_y \psi(-1) = KBOT \cdot \widetilde{\psi_n} \tag{9}\\
&= -1 \tag{10}\\
KTOP_j &= BTOP_i \cdot MDY_{i,j} \tag{11}\\
KBOT_j &= BBOT_i \cdot MDY_{i,j} \tag{12}
\end{align}
$$

for each Fourier mode, n.

To set only the imaginary part to zero to fix the phase factor:

$$
\begin{align}
j &= 3(2N+1)M + M - 5 \tag{13}\\
SPEEDCONDITION &= \delta(j) - \delta(N+j) \tag{14}
\end{align}
$$

Then I set the final row of the jacobian with this vector. I also set the final element of the residuals vector to zero. My intention was to use a Fourier component - its complex conjugate to set the imaginary part to zero. But I am not sure these two components are complex conjugates of one another?