

$$3B_1 + 3B_2 = -C_1 \quad \checkmark$$

ie the four equations are:

$$\begin{aligned} -A_1 + A_2 &= B_1 - B_2 & (1) \\ A_1 + A_2 &= -3B_1 - 3B_2 & (2) \\ -B_1 + B_2 &= C_1 & (3) \\ 3B_1 + 3B_2 &= -C_1 & (4) \end{aligned}$$

From *
* Here we used
can we
B₂ as a
parameter
since if
B₂ = 0, B₁ = 0
-A₁ + A₂ = 0
A₁ + A₂ = 0
which
has soln
A₁ = A₂ = 0
is only
trivial
soln

$$\begin{aligned} (3) + (4) \quad & 2B_1 + 4B_2 = 0 \quad (5) \\ * \quad & B_1 = -2B_2 \end{aligned}$$

Then from (3) $C_1 = -B_1 + B_2 = 3B_2$
 $C_1 = 2B_1 + B_2 = 3B_2$
 (we are now using B₂ as a parameter)
 $C_1 = 3B_2 \quad (6)$

$$\begin{aligned} (1) + (2) \quad & 2A_2 = -2B_1 - 4B_2 \\ & A_2 = -B_1 - 2B_2 \\ & = 2B_2 - 2B_2 = 0 \\ (2) - (1) \quad & 2A_1 = -4B_1 - 2B_2 \\ & = -8B_2 - 2B_2 \\ & 2A_1 = -6B_2 \\ & A_1 = -3B_2 \end{aligned}$$

In terms of B₂

$$\begin{aligned} A_1 &= -3B_2 \\ A_2 &= 0 \\ B_1 &= -2B_2 \\ B_2 &= B_2 \\ C_1 &= 3B_2 \end{aligned}$$

$$T = \frac{R_c |C_1|^2}{R_A |A_1|^2} = \frac{\pi/2L}{\pi/2L} \times \frac{9|B_2|^2}{9|B_2|^2} = 1$$

$$R = 1 - T = 1 - 1 = 0$$

Total transmission occurs

6/6

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