

Fig. 2

- What is V_+ and what is V_- in terms of Z_o and I_o ?
- What is the reflection coefficient at the load Γ_L ?
- Show that the load impedance $Z_L = 0$.
- The real voltage in space and time is defined as $V(z, t) = \text{Re} \{V(z)e^{j\omega t}\}$. Let I_o and Z_o be real, write down the expression and sketch the voltage on the line at $\omega t = \pi/2$.
- Let the voltage of the source be $V_s = I_o Z_o$, what is the source impedance Z_s in terms of Z_o ?

Problem P5.3

Consider the transmission line system which is composed of three parts $T1$, $T2$ and $T3$ as shown in Fig. 3. All of them have the same length ℓ . $T1$ and $T2$ have the characteristic impedance Z_o while $T3$ has the characteristic impedance $2Z_o$. $T2$ is open at the right end while $T3$ is short at the right end.

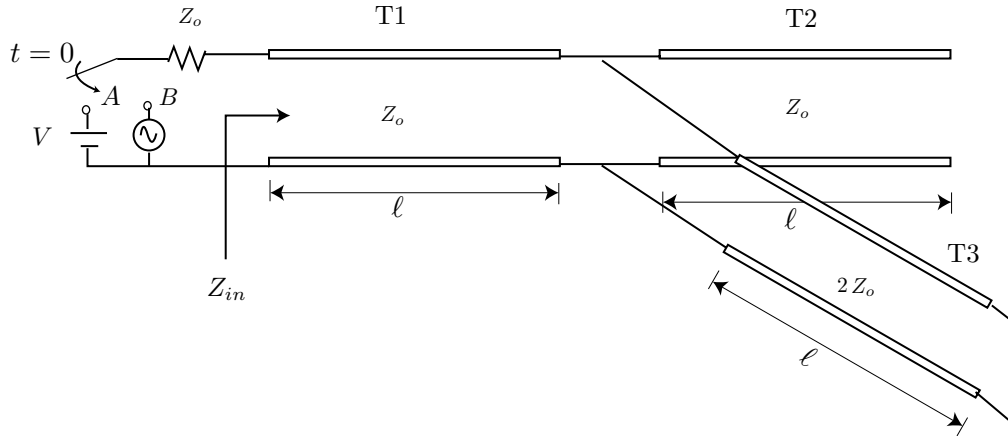


Fig. 3

- If at time $t = 0$ the switch is connected to A , sketch the voltage form $V(z)$ on $T1$ at the time $t = 1.5\ell/v$. Here v is the speed of the wave.
- Now the switch is connected to B and after a long time the sinusoidal steady state has been built up. Calculate the input impedance Z_{in} at the input end. ($k\ell = \pi$.)