$$Z_{in} = Z_s + \frac{Z_p \cdot Z_t}{Z_p + Z_t} = Z_t$$

$$\times (Z_p + Z_t)$$

$$Z_s Z_p + Z_s Z_t + \cancel{Z_p Z_t} = \cancel{Z_t \cdot Z_p} + Z_t^2$$

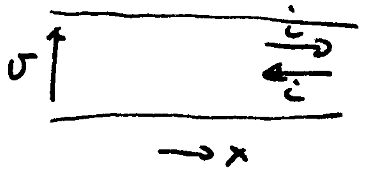
$$Z_t = \frac{Z_s \pm \sqrt{Z_s^2 + 4 Z_s Z_p}}{2}$$

$$Z_t = \frac{1}{2} l (R + j\omega L) + \frac{1}{2} \sqrt{l^2 (R + j\omega L)^2 + 4 \frac{R + j\omega L}{G + j\omega C}}$$

$l \to 0$ sottosezione

$$Z_t = \sqrt{\frac{R + j\omega L}{G + j\omega C}} = \sqrt{Z_s \cdot Z_p} = \sqrt{\frac{Z_s}{Y_p}}$$

Propagazione su una linea



$$v = \underbrace{f_1\left(t - \frac{x}{u}\right)}_{\text{onda destra}} + \overbrace{f_2\left(t + \frac{x}{u}\right)}^{\text{onda a sinistra}}$$

$$i = \frac{1}{R_0} \left[f_1\left(t - \frac{x}{u}\right) \underbrace{-}_{\text{inversione della corrente}} f_2\left(t + \frac{x}{u}\right) \right]$$

se terminazione $R \neq R_0$

$\neq 1$ → $V\left(t - \frac{x}{u}\right)$ onda incidente | tensione ←

$\rho V\left(t - \frac{2l}{u} + \frac{x}{u}\right)$ onda riflessa

$\frac{1}{R_0}$ $\quad$ $\frac{\rho}{R_0}$ | corrente ←

corrente netta $\frac{1 - \rho}{R_0}$

tensione

$$R = \frac{1 + \rho}{\frac{1 - \rho}{R_0}}$$

$$\rho = \frac{\frac{R}{R_0} - 1}{\frac{R}{R_0} + 1}$$