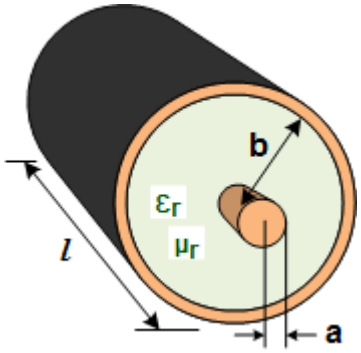
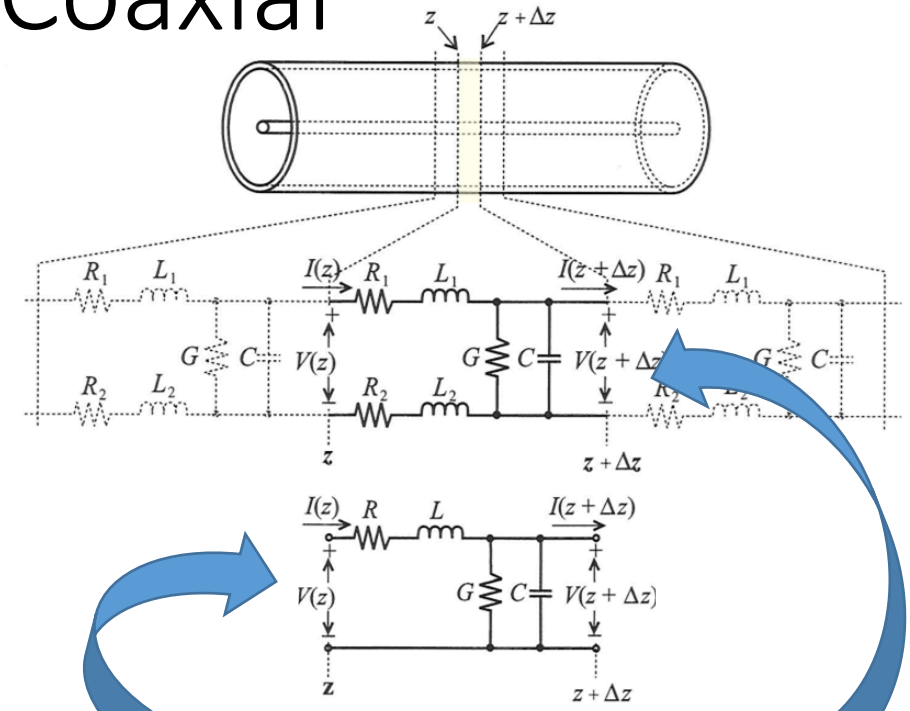
Exercício 1 – Cabo Coaxial





Para

$a = 5\ mm$ → LineCalc (ADS)

$\varepsilon_r = 2.1$ ↓

$Z_0 = 30\ \Omega$ $a = 2.42\ mm$

$l = 20\ \text{cm}$ ↓

Teoria

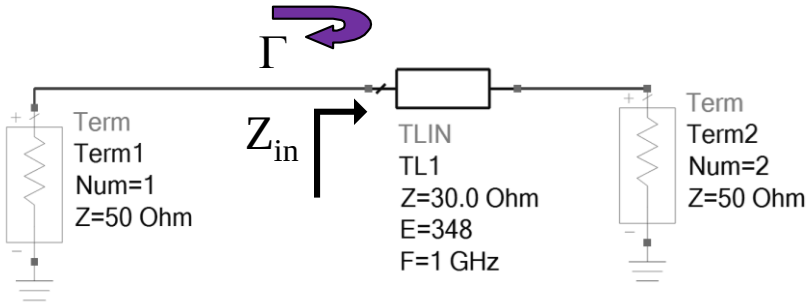
$$L = \frac{\mu_0 \cdot \mu_r \cdot l}{2 \cdot \pi} \cdot ln\left(\frac{b}{a}\right) \quad [\![m, H]\!] \rightarrow L_{eq} = 0.145 \frac{\mu H}{m} \rightarrow L_{tot} = 29\ nH$$

$$C = \frac{2 \cdot \pi \cdot \varepsilon_0 \cdot \varepsilon_r}{ln\left(\frac{b}{a}\right)} \quad [\![F/length]\!] \rightarrow C_{eq} = 0.0161 \frac{nF}{m} \rightarrow C_{tot} = 32.2\ pF$$

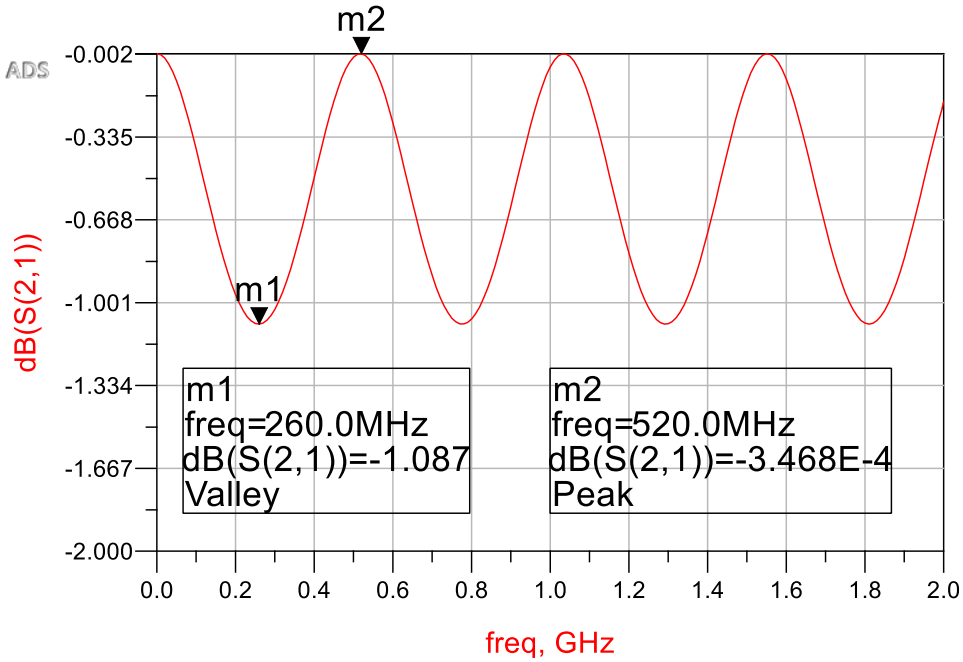
1) Calcule valor de Z_{in} em:

a) 260 MHz

b) 517 MHz



2) Calcule valor de Γ, VSWR e a potência Refletida



3) Calcule Z_{in} para:

a) $Z_L = Z_0$ (carga casada)

b) $l = \frac{\lambda}{4}$

c) $l = \frac{\lambda}{4}$ e $Z_L=0$

d) $l = \frac{\lambda}{4}$ e $Z_L=\infty$

e) $l = \frac{\lambda}{2}$

f) $l \ll \lambda$

Apesar dos dois últimos itens darem a mesma resposta, os fenômenos envolvidos são diferentes. Explique-os