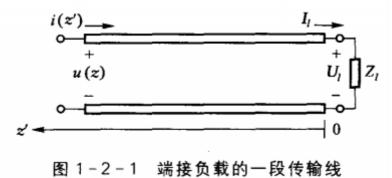
传输线的行波状态

一、之前学过的知识:

对接上负载的一段传输线:



在传输线上的电压和电流可以表示为:

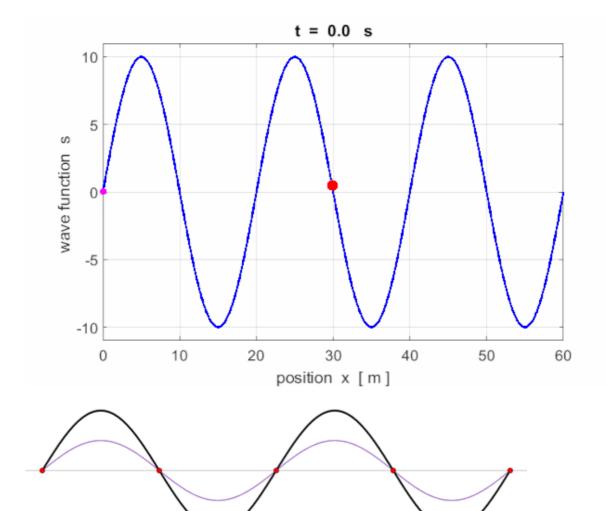
$$egin{split} u(z) &= A_1 e^{-jeta z} + A_2 e^{jeta z} = rac{1}{2} (U_l + Z_0 I_l) e^{jeta z'} + rac{1}{2} (U_l - Z_0 I_l) e^{-jeta z'} = u^+(0) e^{jeta z'} + u^-(0) e^{-jeta z'} \ &i(z) = rac{u(z)}{Z_0} \end{split}$$

终端的反射系数

$$\Gamma_l = rac{Z_l - Z_0}{Z_l + Z0} = rac{u^-(0)e^{-jeta z'}}{u^+(0)e^{jeta z'}}$$

二、行波状态:

1.行波和驻波是什么



2.满足的条件

此时

$$u^-(0)e^{-jeta z'}=0$$
 $\Gamma_l=rac{Z_l-Z_0}{Z_l+Z0}=0$ $Z_l=Z_0$

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代入到电压和电流的表达式中:

$$egin{split} u(z) &= rac{1}{2}(U_l + Z_0I_l)e^{jeta z} = u^+(0)e^{jeta z} \ i(z) &= rac{1}{2Z_0}(U_l + Z_0I_l)e^{jeta z} = I^+(0)e^{jeta z} \end{split}$$

写成瞬态形式之后:

$$egin{aligned} u(z,t) &= |U_0^+| cos(\omega t - eta z + arphi_0) \ i(z,t) &= |I_0^+| cos(\omega t - eta z + arphi_0) \end{aligned}$$