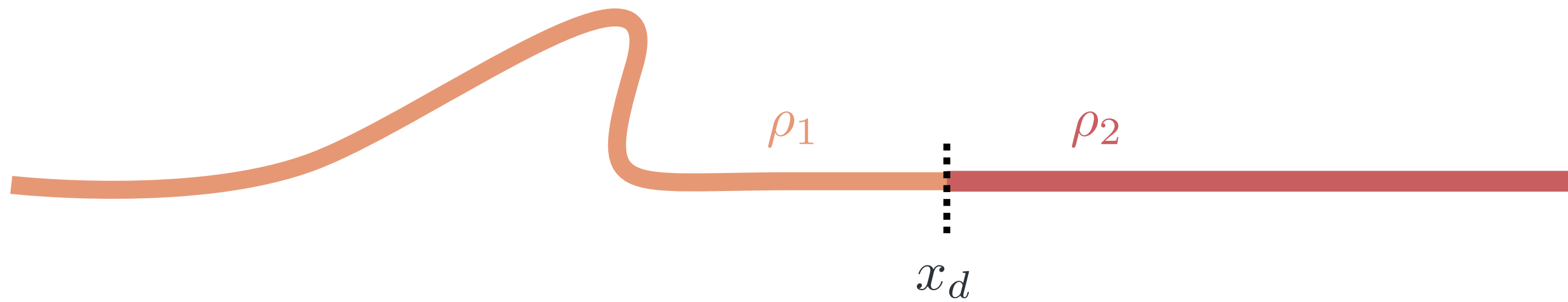


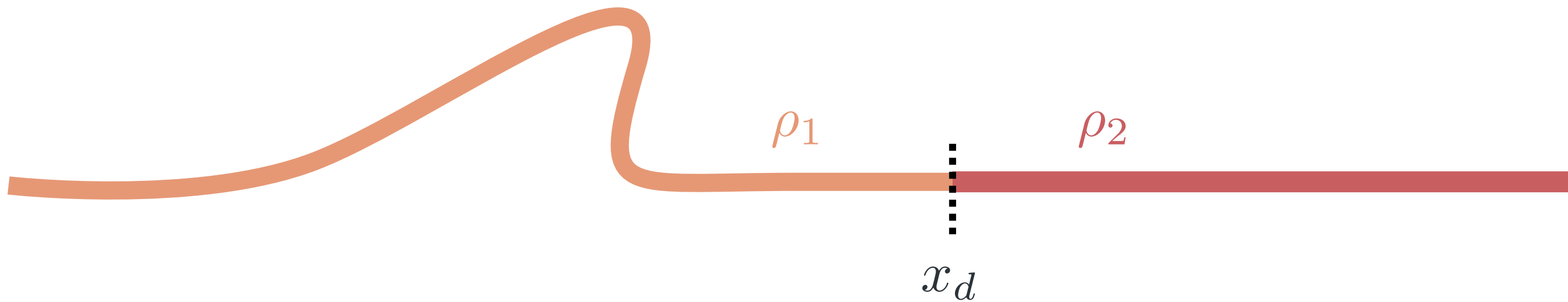
**Hola**

## C.E. de la cuerda



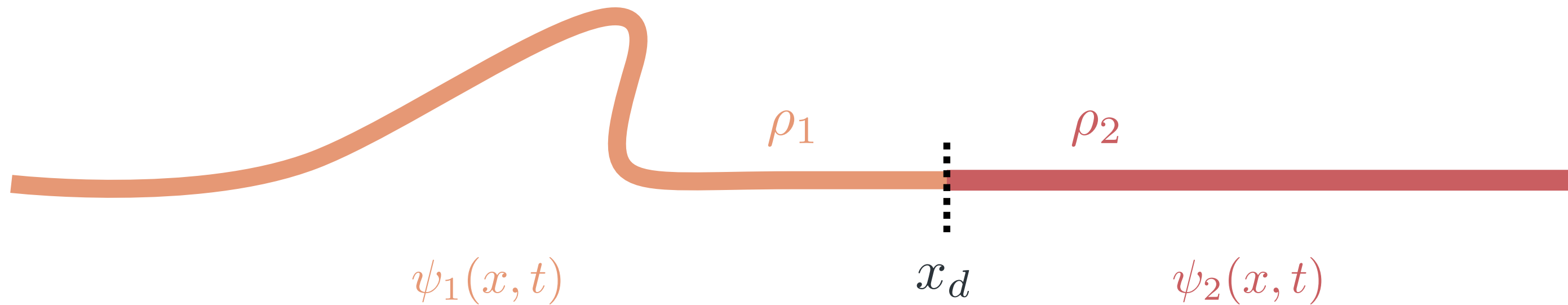
## C.E. de la cuerda

$$\psi_i^{(1)}(x, t) = F(x, t)$$

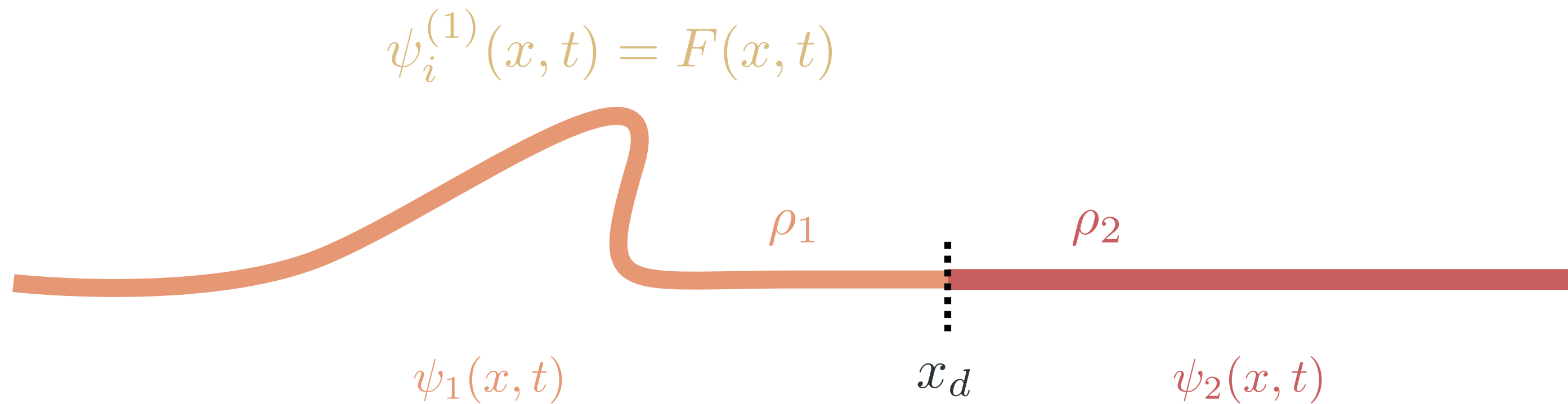


## C.E. de la cuerda

$$\psi_i^{(1)}(x, t) = F(x, t)$$



## C.E. de la cuerda

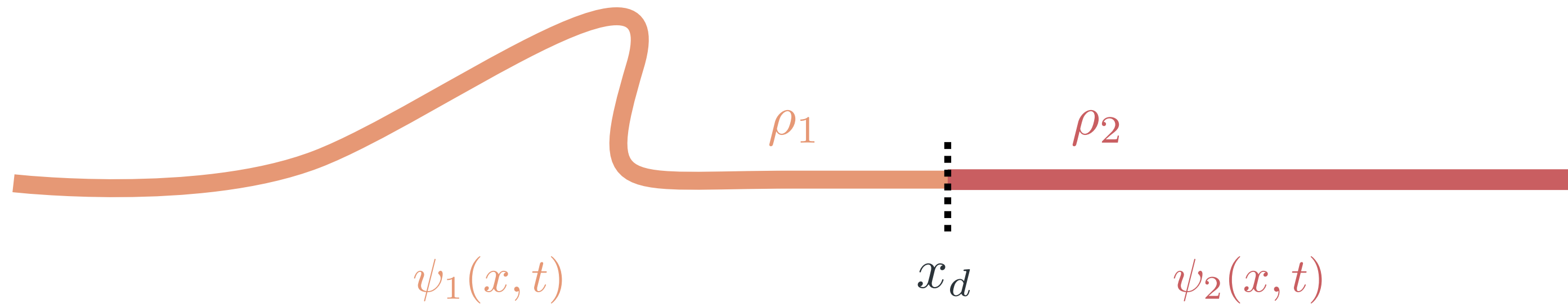


Continuidad de la cuerda:  $\psi_1(x_d, t) = \psi_2(x_d, t)$

Continuidad de  $F_y$ : 
$$-T_1 \left. \frac{\partial \psi_1(x, t)}{\partial x} \right|_{x_d} + T_2 \left. \frac{\partial \psi_2(x, t)}{\partial x} \right|_{x_d} = \delta_m a$$

## C.E. de la cuerda

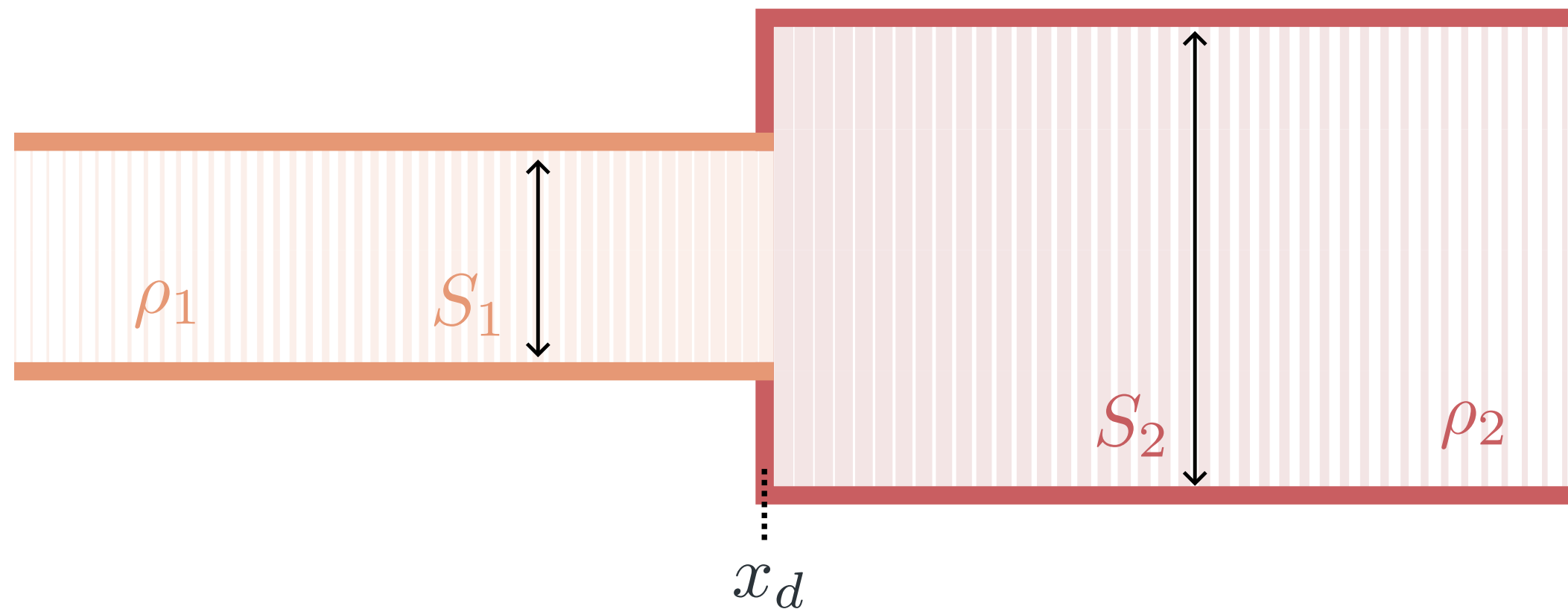
$$\psi_I^{(1)}(x, t) = A_I^{(1)} \cos(\omega t - kx)$$



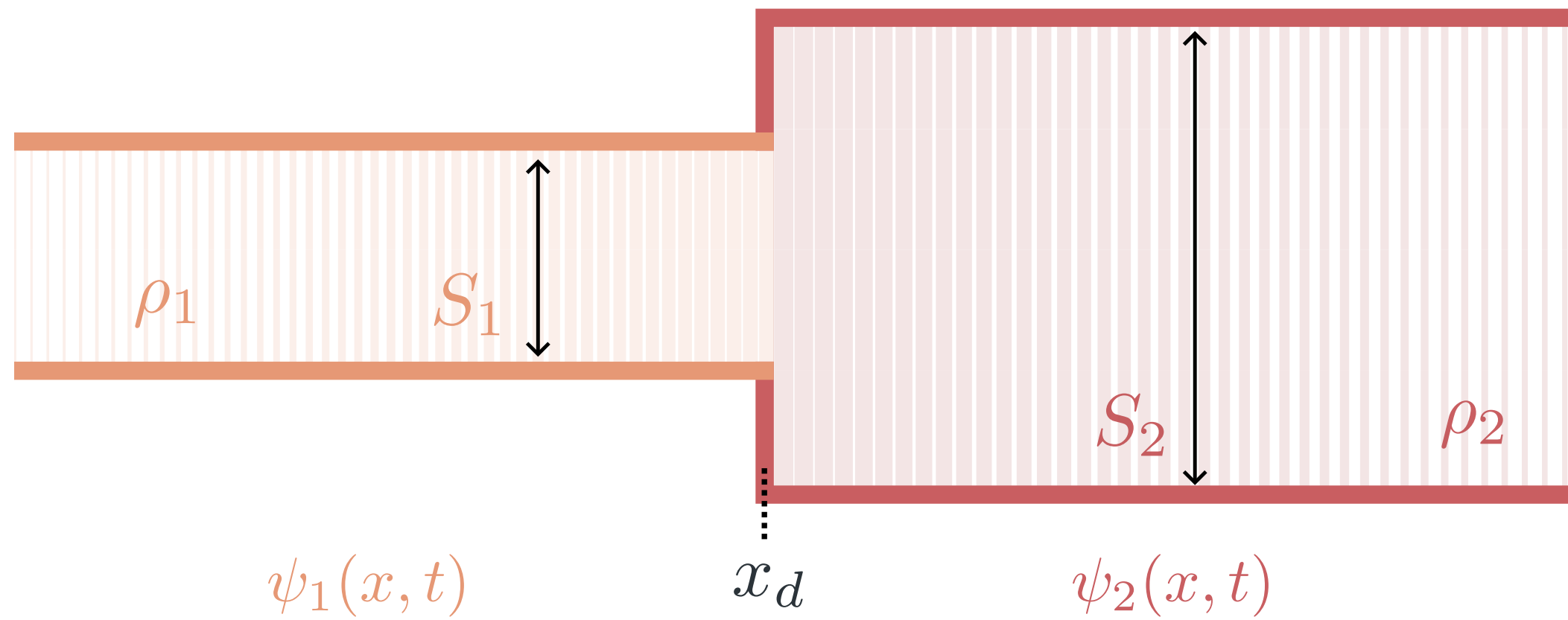
Continuidad de la cuerda:  $\psi_1(x_d, t) = \psi_2(x_d, t)$

Continuidad de  $F_y$ : 
$$-T_1 \left. \frac{\partial \psi_1(x, t)}{\partial x} \right|_{x_d} + T_2 \left. \frac{\partial \psi_2(x, t)}{\partial x} \right|_{x_d} = \delta_m a$$

## C.E. del tubo

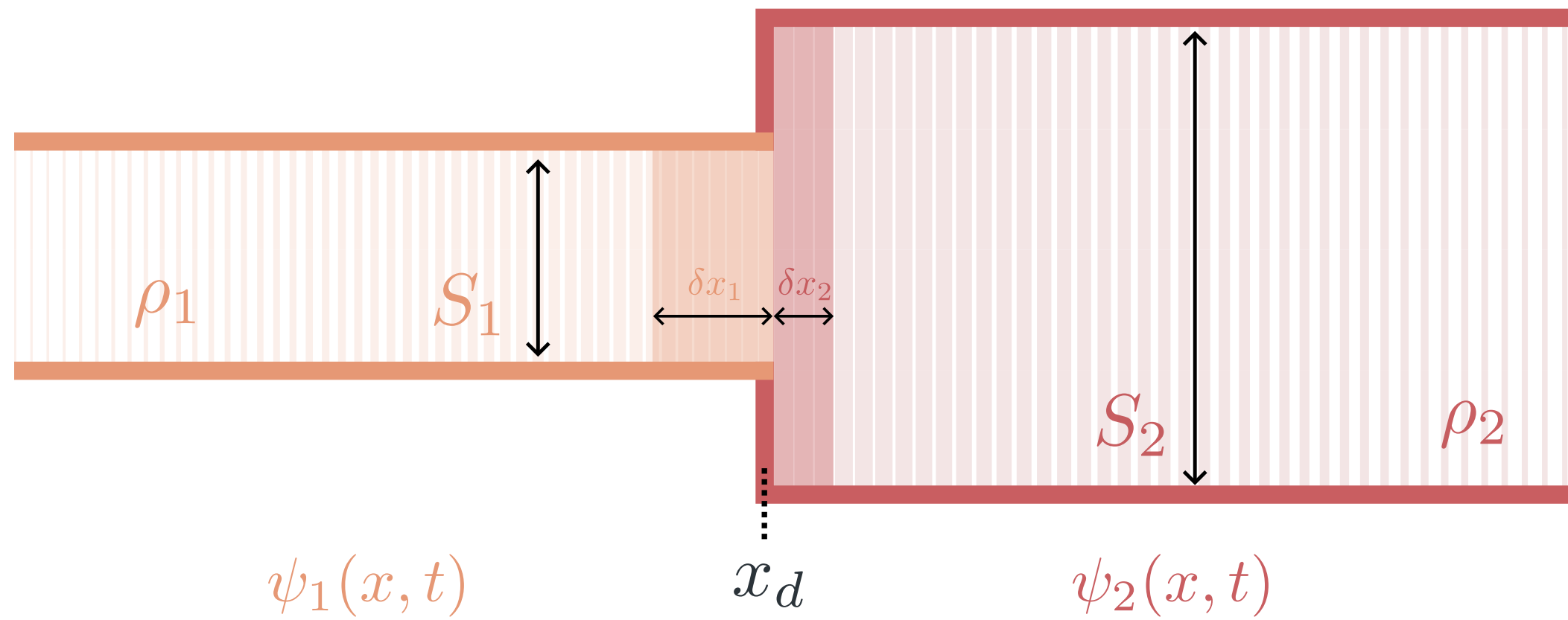


## C.E. del tubo

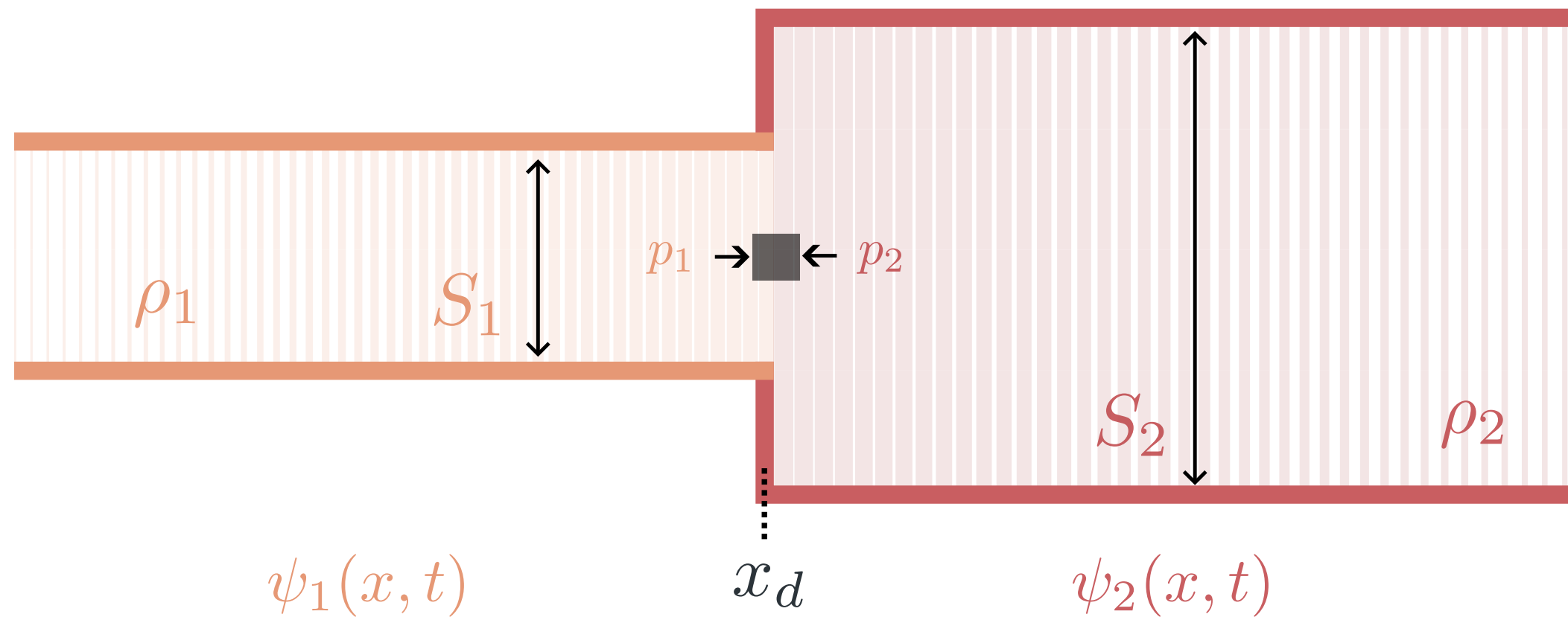




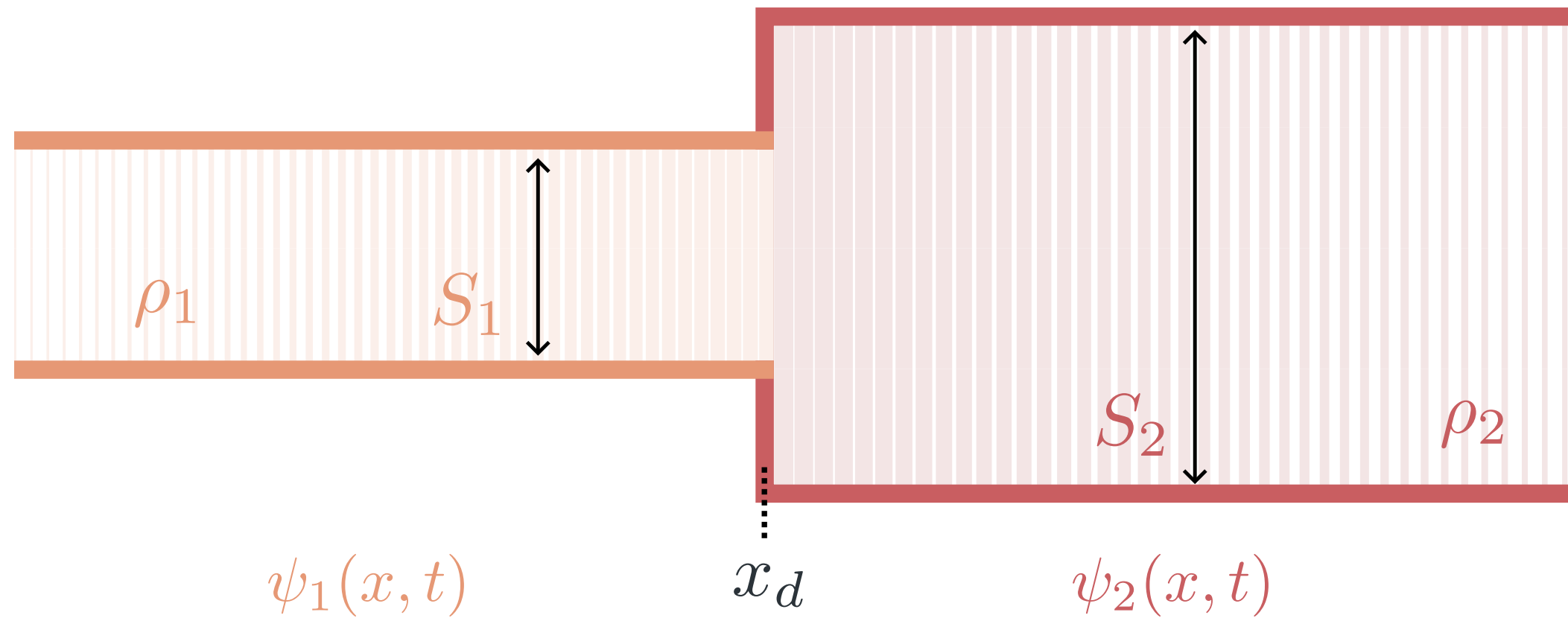
## C.E. del tubo



## C.E. del tubo



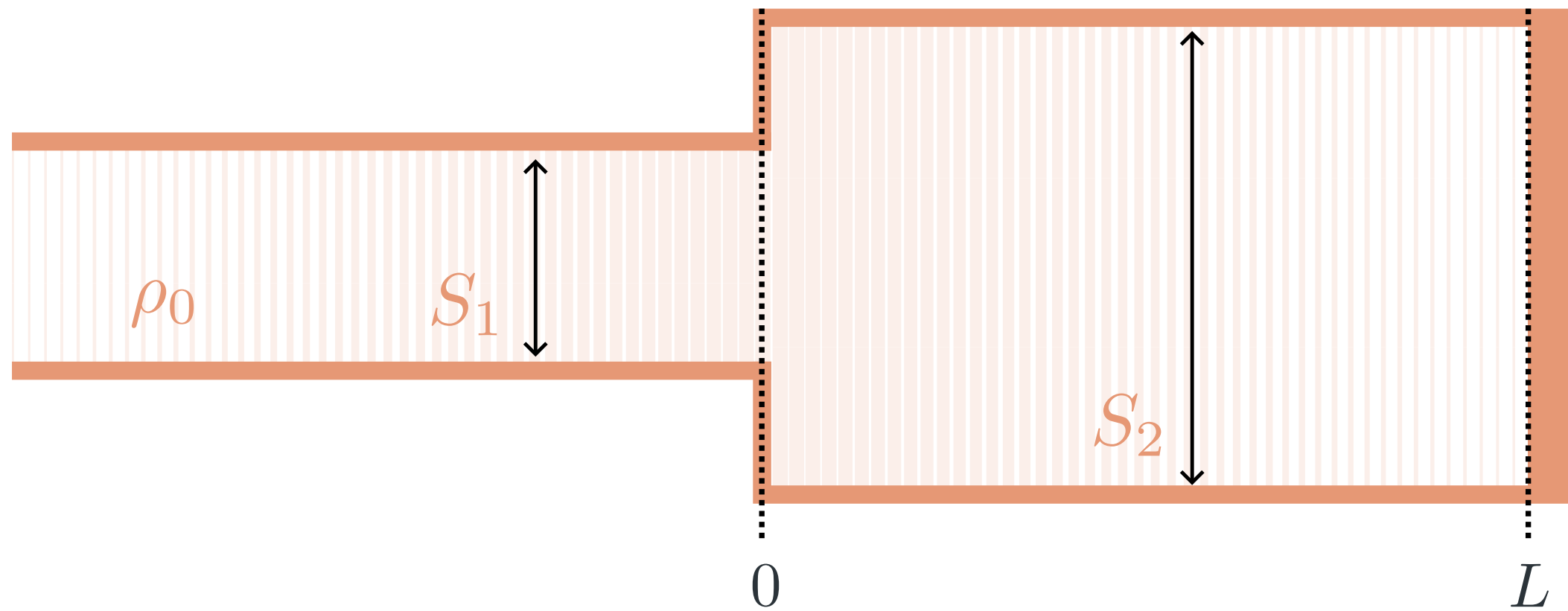
## C.E. del tubo



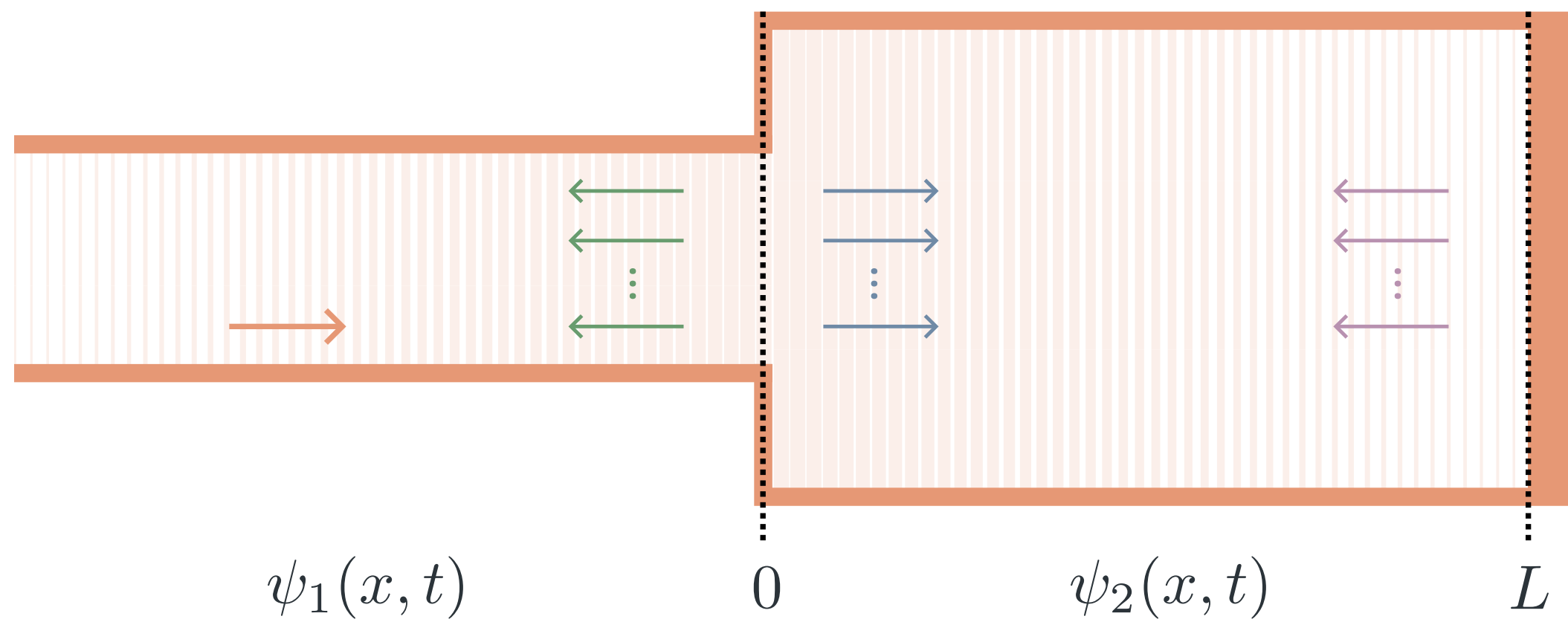
Conservación de la masa: 
$$\rho_1 S_1 \left. \frac{\partial \psi_1(x, t)}{\partial t} \right|_{x_d} = \rho_2 S_2 \left. \frac{\partial \psi_2(x, t)}{\partial t} \right|_{x_d}$$

Continuidad de las presiones: 
$$\gamma_1 \left. \frac{\partial \psi_1(x, t)}{\partial x} \right|_{x_d} = \gamma_2 \left. \frac{\partial \psi_2(x, t)}{\partial x} \right|_{x_d}$$

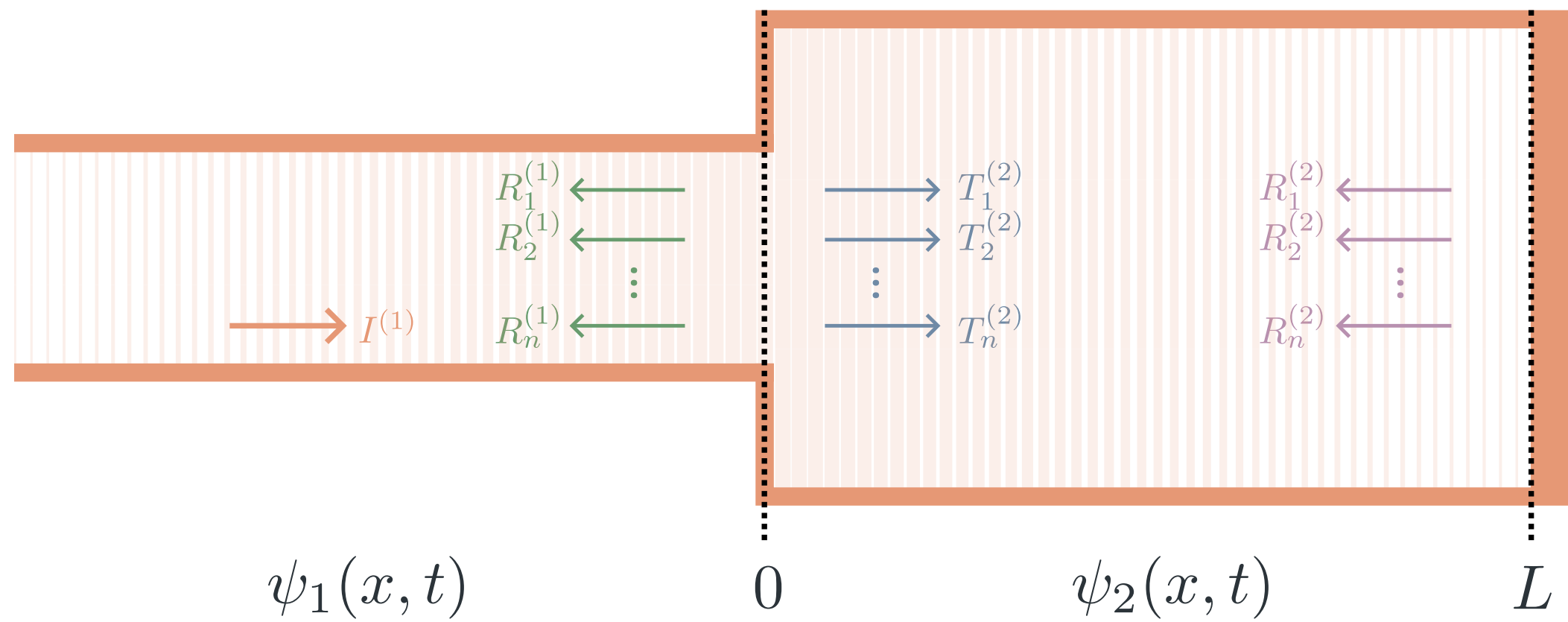
# El tubo cerrado



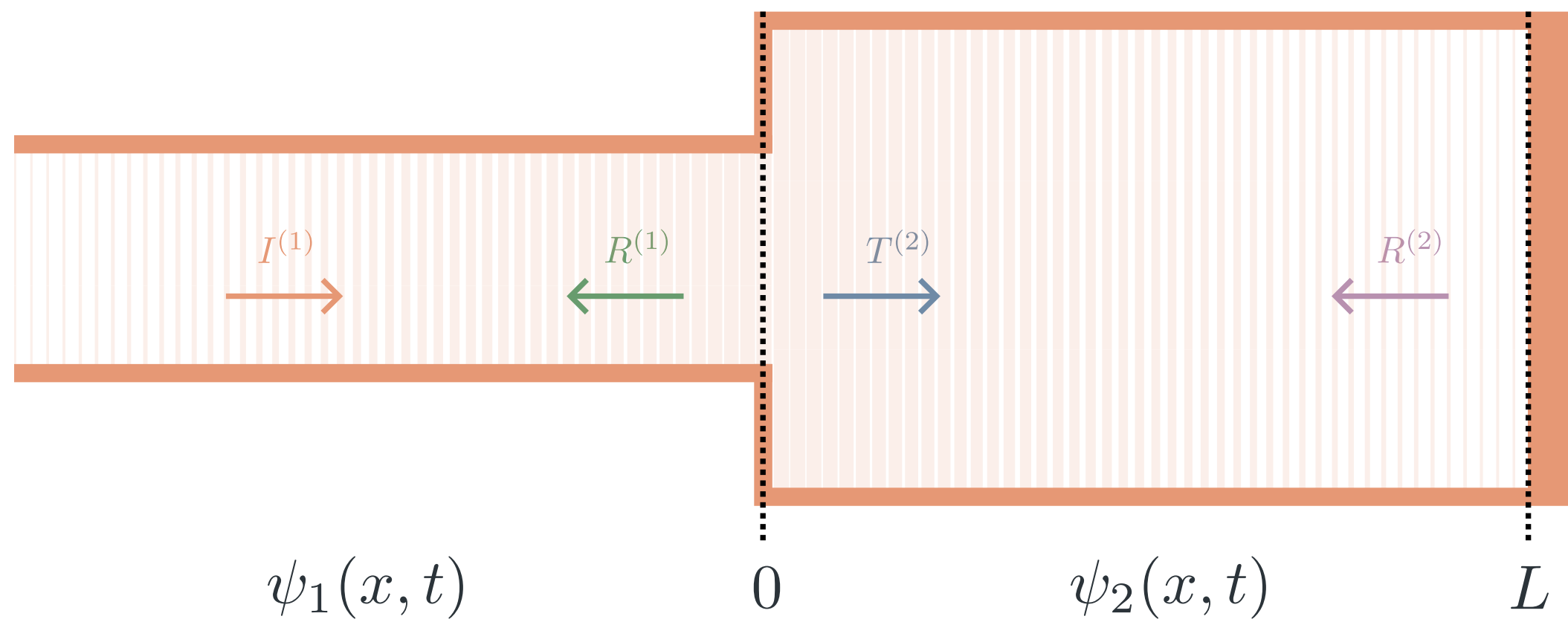
# El tubo cerrado



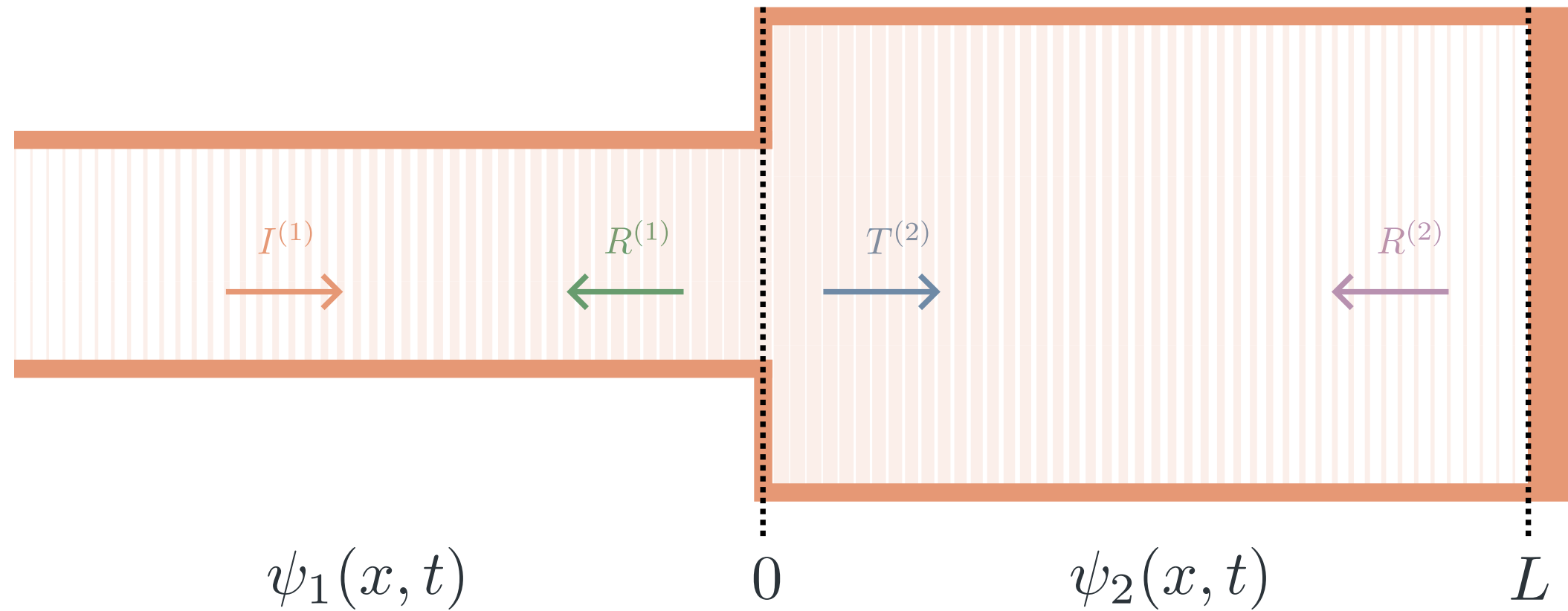
# El tubo cerrado



# El tubo cerrado



# El tubo cerrado



$$\psi_1(x, t) = A_I^1 e^{i(\omega t - kx)} + A_R^1 e^{i(\omega t + kx)}$$

$$\psi_2(x, t) = A_T^2 e^{i(\omega t - kx)} + A_R^2 e^{i(\omega t + kx)}$$



**Eso es todo**