Mecánica Teórica: Capitulo 33

$$\mathcal{L}(\phi, \partial_\mu \phi) = \frac{1}{2} \partial_\mu \phi \partial^\mu \phi - \frac{m^2}{2} \phi^2$$

$$\frac{\partial \mathcal{L}}{\partial \phi} - \partial_\mu \frac{\partial \mathcal{L}}{\partial(\partial_\mu \phi)} = 0$$

$$\frac{\partial \mathcal{L}}{\partial \phi} = -m^2 \phi$$

$$\partial_\mu \frac{\partial \mathcal{L}}{\partial(\partial_\mu \phi)} = [(\partial_0 \phi)^2 - (\partial_1 \phi)^2]$$
$$= \partial_\mu \partial^\mu \phi$$

$$-m^2 \phi - \partial_\mu \partial^\mu \phi = 0$$

Se multiplica toda la ecuación por -1:

$$[\partial_\mu \partial^\mu + m^2]\phi = 0$$