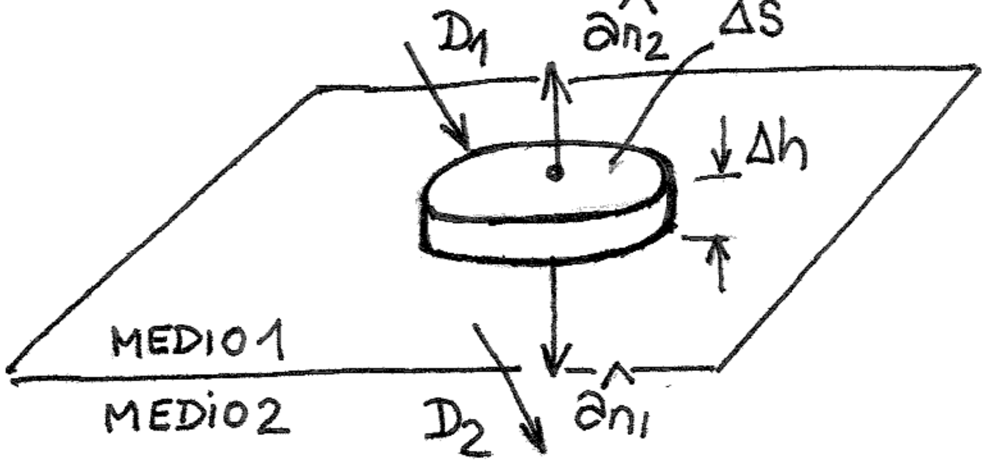
CONDICIONES DE CONTORNO



APLICANDO LEY DE GAUSS

$$q = \underbrace{\rho \Delta h}_{\rho_{sup}} \Delta S.$$

$$\oint_S \vec{D} \cdot \hat{n}\, dS = q$$

$$\vec{D}_2\, \hat{a}_{n_1} \Delta S + \vec{D}_1\, \hat{a}_{n_2} \Delta S + \text{contrib. lateral} = \rho_{sup} \cdot \Delta S.$$

$$\Delta S \left(D_{n_2} - D_{n_1}\right) + \text{contrib. lateral} = \rho_{sup} \cdot \Delta S$$

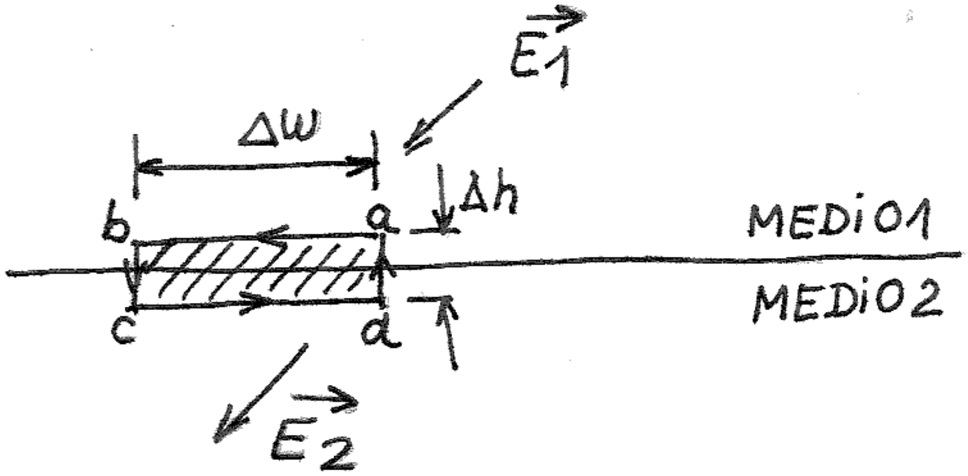
Si $\Delta h \to 0$

$$\left(D_{n_2} - D_{n_1}\right) \cancel{\Delta S} = \rho_{sup} \cancel{\Delta S}$$

$$\boxed{D_{n_2} - D_{n_1} = \rho_{sup}}$$

o bien

$$\left(\vec{D}_2 - \vec{D}_1\right) \cdot \hat{n} = \rho_{sup}.$$



$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

$$\int_S \nabla \times \vec{E} \cdot \vec{dS} = \int_S -\frac{\partial \vec{B}}{\partial t} \cdot \vec{dS}$$ ← APLICO TEOREMA STOKES.

$$\oint_{C=abcda} \vec{E} \cdot \vec{dl} = -\int_S \frac{\partial \vec{B}}{\partial t} \cdot \vec{dS}$$

$$E_{1t}\Delta w - E_{2t}\Delta w + \text{contribuciones de Laterales} = \underbrace{-\frac{\partial \vec{B}}{\partial t}\Delta S}_{\to 0.}$$

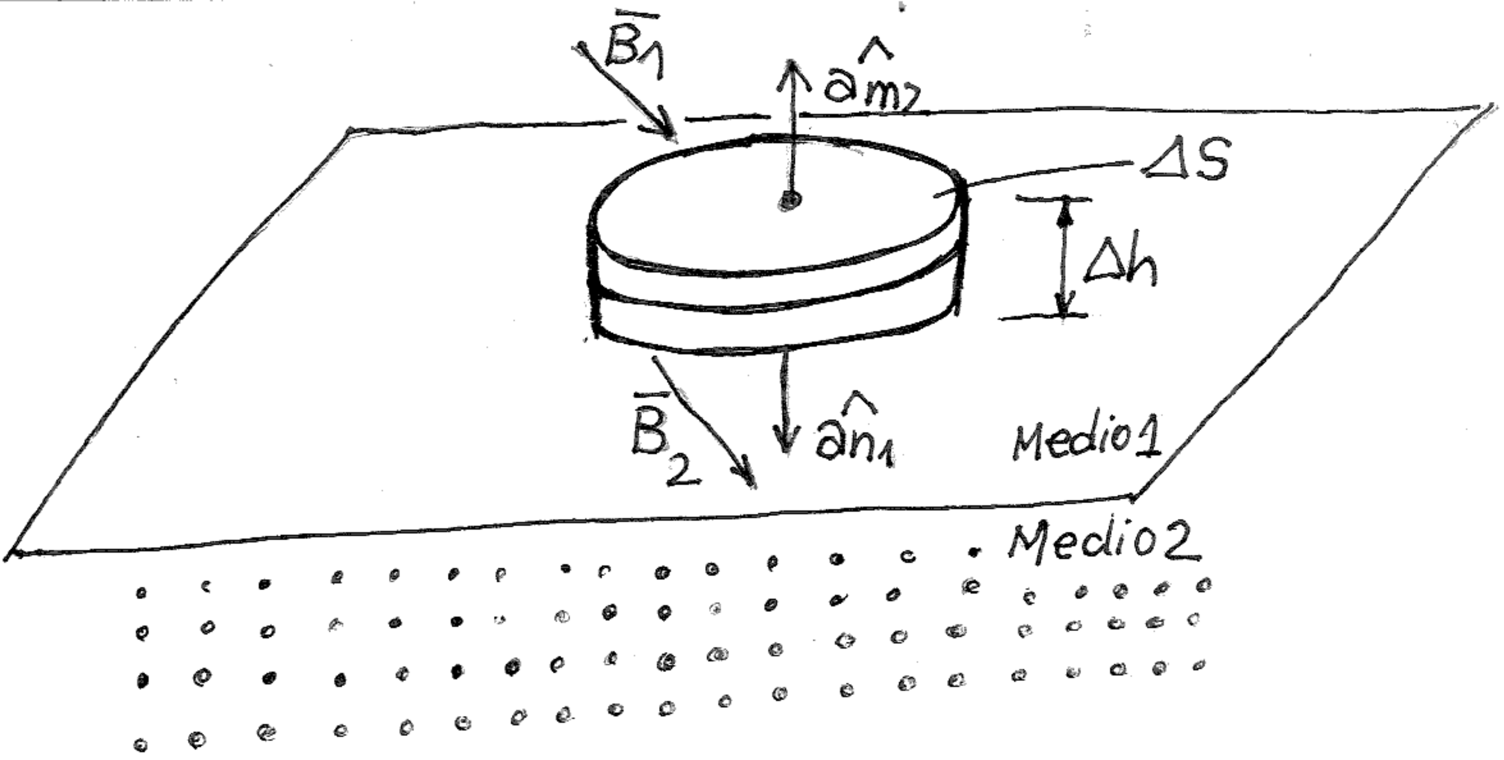
Si $\Delta h \to 0.$

$$(E_{1t} - E_{2t})\Delta w = 0.$$

$$\boxed{E_{1t} = E_{2t}}$$

SE CONSERVAN LAS COMPONENTES TANGENCIALES DEL CAMPO ELÉCTRICO AL CRUZAR LA INTERFAZ

$$\hat{n} \times (\vec{E_1} - \vec{E_2}) = 0$$ FORMA GENERAL DE ESCRIBIRLO.



$$\nabla \cdot \vec{B} = 0$$

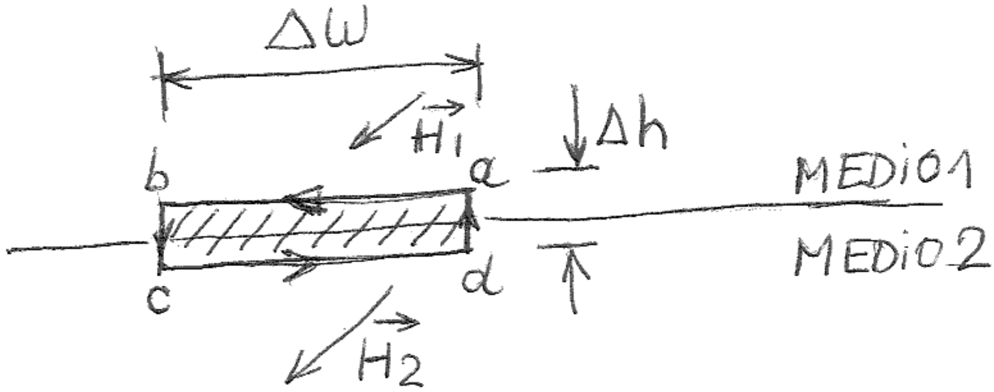
$\Delta h \to 0$

$$\int_v \nabla \cdot \vec{B}\, dv = \int_S \vec{B} \cdot d\vec{S} = \left(\vec{B}_2 \cdot \hat{a}_{n1} + \vec{B}_1 \cdot \hat{a}_{n2} \right) \Delta S$$

$$\int_v \nabla \cdot \vec{B}\, dv = \left(B_{n2} - B_{n1} \right) \Delta S$$

$$B_{n2} - B_{n1} = 0$$

$$\boxed{B_{n2} = B_{n1}}$$



$$\nabla \times \vec{H} = \vec{J} + \partial \vec{D}/\partial t$$

$$\int_S \nabla \times \vec{H} \cdot \vec{dS} = \int_S \left(\vec{J} \cdot \vec{dS} + \partial \vec{D}/dt \cdot \vec{dS} \right)$$

POR TEOREMA DE STOKES

$$\oint_C \vec{H} \cdot \vec{dl} = \int_S \left(\vec{J} \cdot \vec{dS} + \partial \vec{D}/\partial t \cdot \vec{dS} \right)$$

$$H_{1_t} \Delta W - H_{2_t} \Delta W + \left(H_n \overline{bc} + H_n \overline{da} \right) = J \Delta S + \frac{\partial D}{\partial t} \Delta S$$

$\Delta S = \Delta W \cdot \Delta h$ (Area del rectángulo)

Si J ES FINITA, y $\Delta h \to 0$.

$$H_{1t} \Delta W - H_{2t} \Delta W = 0$$

$$H_{1_t} - H_{2_t} = 0 \qquad \boxed{H_{1t} = H_{2t}}$$

SE CONSERVAN LAS COMPONENTES DEL CAMPO MAGNETICO AL PASAR LA INTERFAZ