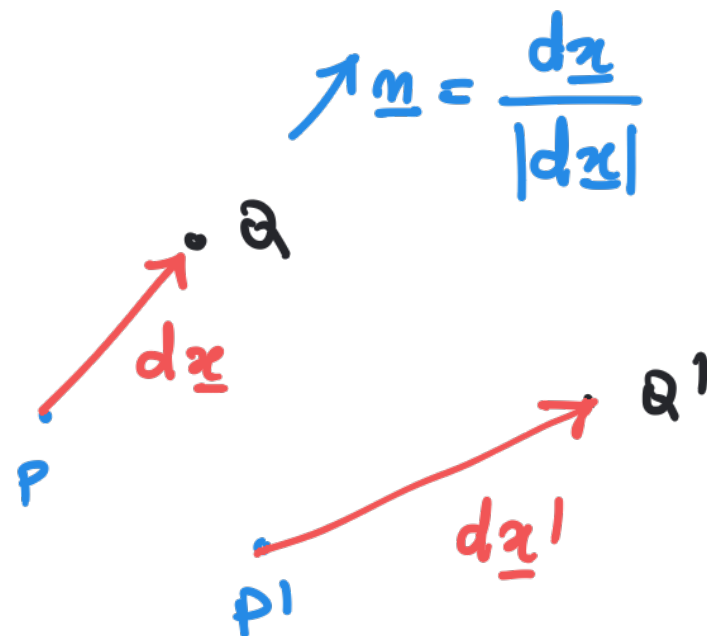


FORMULA DI CAUCHY PER LA DEFORMAZIONE



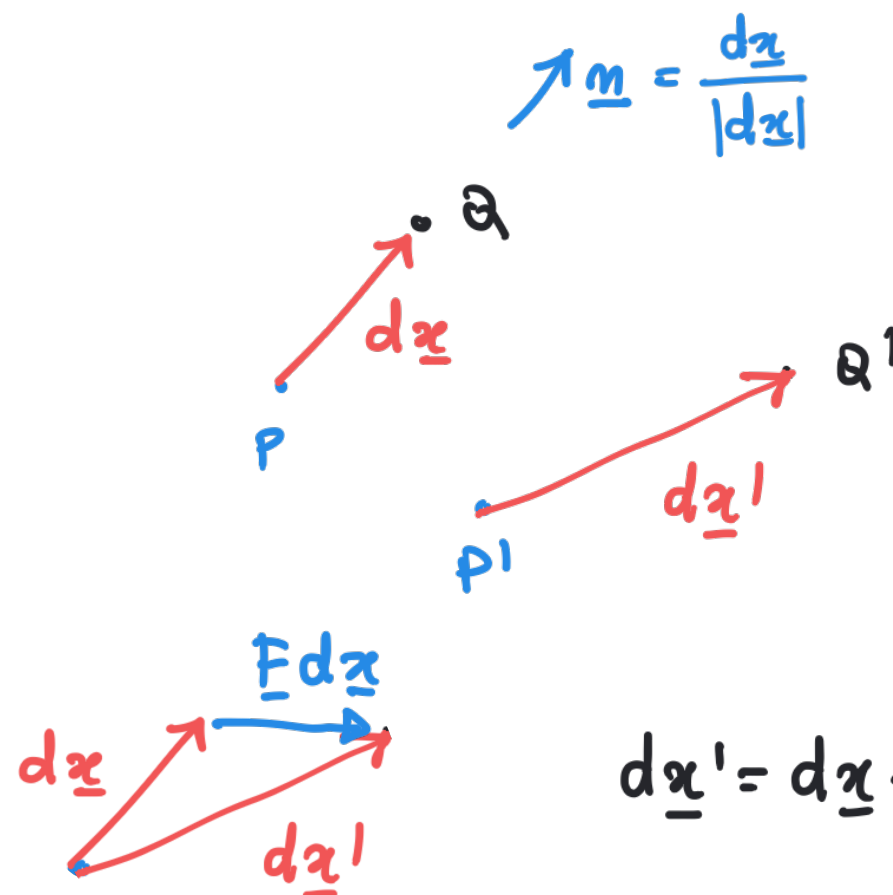
$$\varepsilon_n = \frac{|d\underline{x}'| - |d\underline{x}|}{|d\underline{x}|}$$

$$\text{Hp: } |\underline{E}| \ll 1$$

$$\varepsilon_n \approx \underline{n} \cdot \underline{E} \underline{n}$$

$$\begin{aligned} \underline{E} &= \nabla \underline{u} \\ &= \underline{\underline{E}} + \underline{\underline{\Omega}} \\ \underline{\underline{E}} &= \underline{\underline{E}}^T \quad \underline{\underline{\Omega}} = -\underline{\underline{\Omega}}^T \end{aligned}$$

FORMULA DI CAUCHY PER LA DEFORMAZIONE



$$\begin{aligned} d\u0302x' &= d\u0302x + \underline{F} d\u0302x \\ &= (\underline{I} + \underline{F}) d\u0302x \end{aligned}$$

$$\varepsilon_n = \frac{|d\u0302x'| - |d\u0302x|}{|d\u0302x|}$$

Hp: $|\underline{F}| \ll 1$ $\underline{F} = \nabla \underline{u}$

$$\varepsilon_n \approx \underline{n} \cdot \underline{F} \underline{n}$$

DIM:

$$|d\u0302x'|^2 = d\u0302x' \cdot d\u0302x'$$

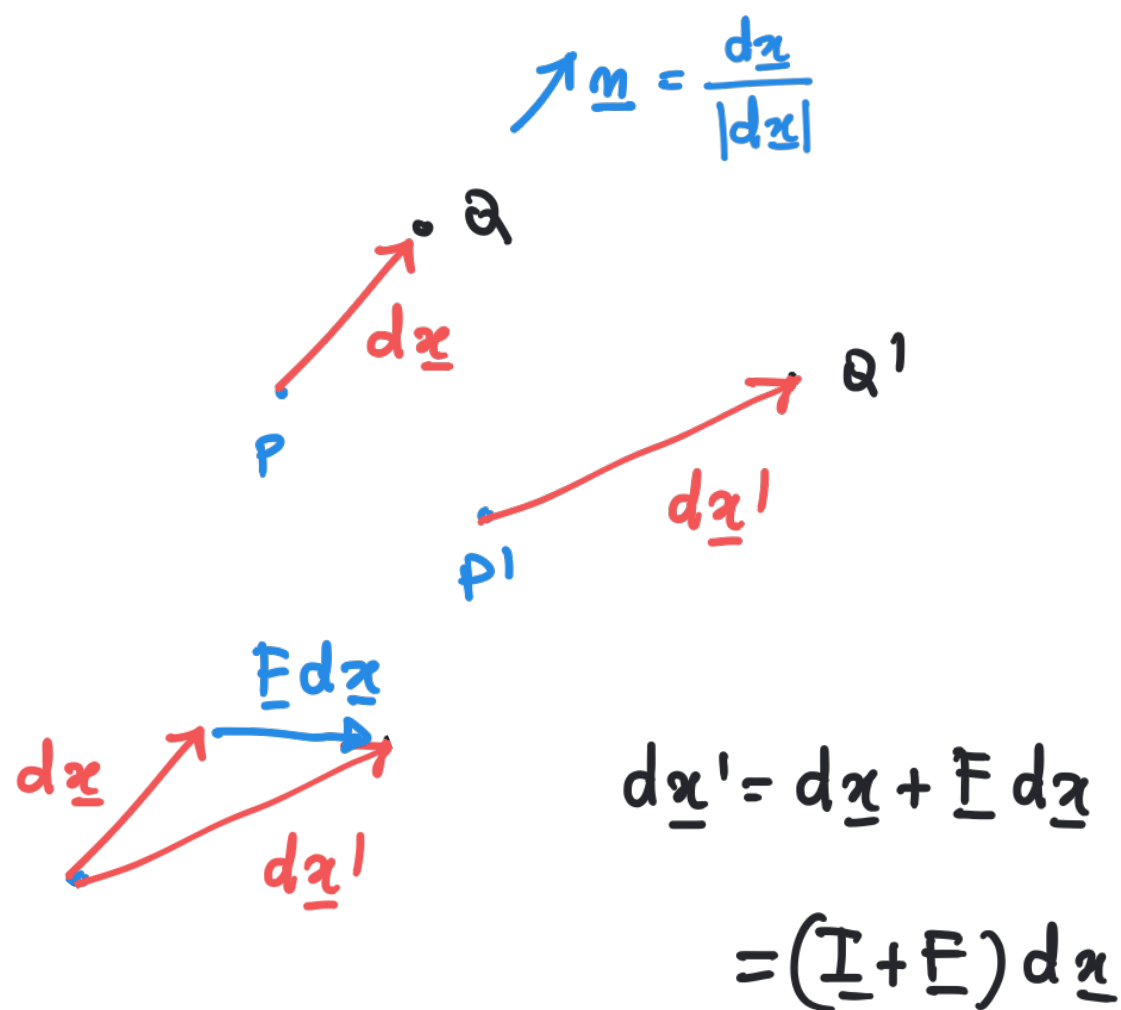
$$\begin{aligned} &= d\u0302x \cdot d\u0302x + 2 \underline{F} d\u0302x \cdot d\u0302x \\ &\quad + \underline{F} d\u0302x \cdot \underline{F} d\u0302x \end{aligned}$$

trascur.
↓

$$|d\u0302x'| = \sqrt{|d\u0302x|^2} = \sqrt{|d\u0302x|^2 + 2 \underline{F} d\u0302x \cdot d\u0302x + \cancel{|\underline{F} d\u0302x|^2}} \approx |d\u0302x| + \underline{F} d\u0302x \cdot d\u0302x$$

$$\varepsilon_n \approx \frac{\underline{F} d\u0302x \cdot d\u0302x}{|d\u0302x|^2} = \underline{F} \frac{d\u0302x}{|d\u0302x|} \cdot \frac{d\u0302x}{|d\u0302x|} = \underline{F} \underline{n} \cdot \underline{n}$$

FORMULA DI CAUCHY PER LA DEFORMAZIONE



$$\epsilon_n = \frac{|d\underline{x}'| - |d\underline{x}|}{|d\underline{x}|}$$

Hp: $|\underline{F}| \ll 1$ $\underline{F} = \nabla \underline{u}$

$$\epsilon_n \approx \underline{n} \cdot \underline{F} \underline{n}$$

DIM:

$$\begin{bmatrix} \underline{E} + \underline{\Omega} \\ \underline{E}^T & -\underline{\Omega}^T \end{bmatrix}$$

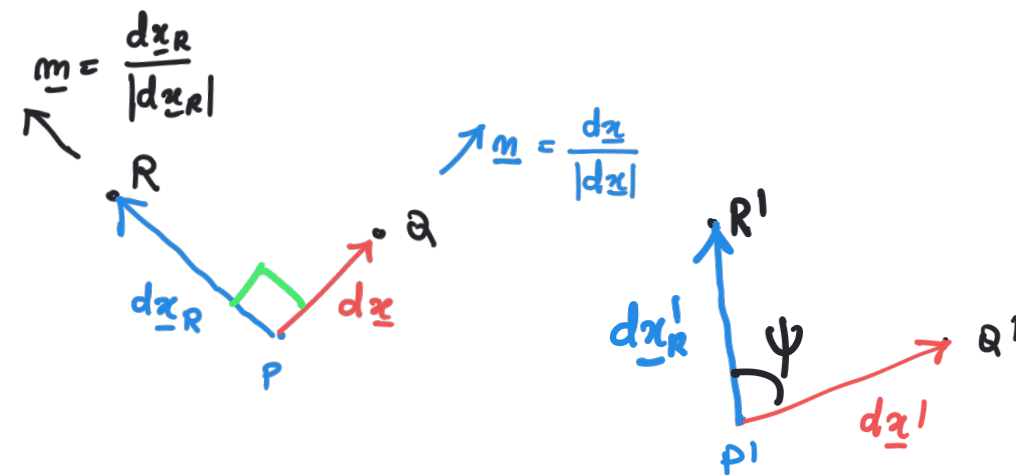
$$|d\underline{x}'|^2 = d\underline{x}' \cdot d\underline{x}'$$

$$= d\underline{x} \cdot d\underline{x} + 2 \underline{F} d\underline{x} \cdot d\underline{x} + \underline{F} d\underline{x} \cdot \underline{F} d\underline{x}$$

oss: $\underline{n} \cdot \underline{\Omega} \underline{n} = -\underline{n} \cdot \underline{\Omega}^T \underline{n} = -\underline{\Omega} \underline{n} \cdot \underline{n} \Rightarrow \underline{n} \cdot \underline{\Omega} \underline{n} = 0$

$$\epsilon_n \approx \underline{F} \underline{n} \cdot \underline{n} = (\underline{E} + \underline{\Omega}) \underline{n} \cdot \underline{n} = \underline{E} \underline{n} \cdot \underline{n} + \cancel{\underline{\Omega} \underline{n} \cdot \underline{n}}$$

FORMULA DI CAUCHY PER LA DEFORMAZIONE



$$\varepsilon_m = \frac{|\underline{d}\underline{x}'| - |\underline{d}\underline{x}|}{|\underline{d}\underline{x}|}$$

$$\gamma_{mm} = \gamma_{nn} = \frac{\pi}{2} - \psi$$

$$H_p: |\underline{E}| \ll 1 \quad \underline{F} = \nabla \underline{u}$$

$$\varepsilon_n \approx \underline{n} \cdot \underline{E} \underline{n} \quad \begin{bmatrix} \underline{E} + \underline{\Omega} \\ \underline{E}^T & -\underline{\Omega}^T \end{bmatrix}$$

$$\gamma_{mm} \approx \frac{1}{2} \underline{m} \cdot \underline{E} \underline{m}$$

omettendo la
dimostrazione