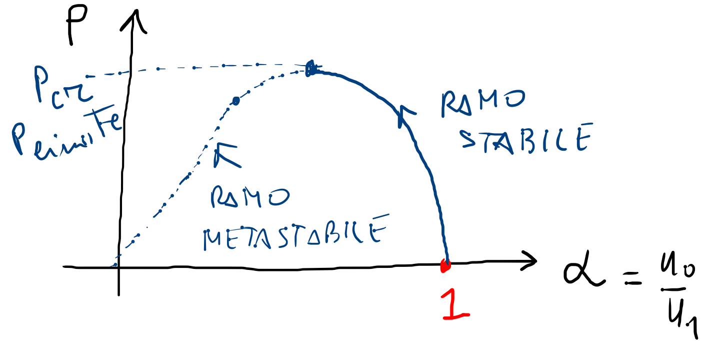
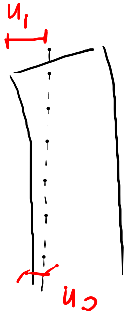
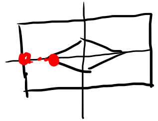
14/12/21

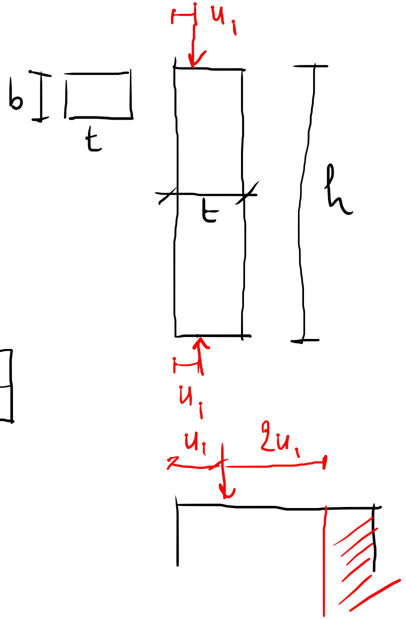
...... $P = P(u_0)$



$$P_{cr}(P_{lim}) = 0{,}265 \, P_{crEQ} \qquad \text{(YOKEL)}$$



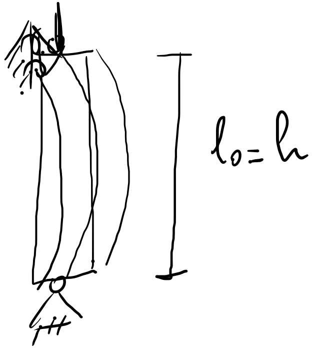




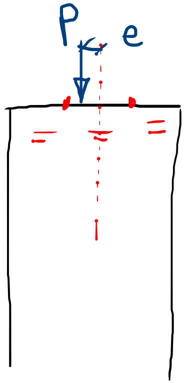
Stimiamo il carico critico di Eulero del pilastro equivalente

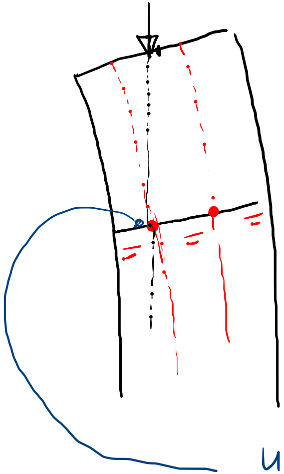
$$P_{cr\,EQ} = \frac{\pi^2}{h^2} E I_{EQ}$$

$$I_{EQ} = \frac{b\,(3u_1)^3}{12}$$



PROBL. "PICCOLA ECCENTRICITÀ" (SAHLIN, 1971 ; FRISCH-FAY, 1975)





TUTTO COMPRESSO (LINEA ELASTICA DI EULERO-BERNOULLI)

INTERFACCIA (INCOGNITA)

SEZ PARZIALIZZATA (MODELLO DI YOKEL -NO TENSION- MATERIAL-)

uguaglianza di spostamenti + C. CONTORNO

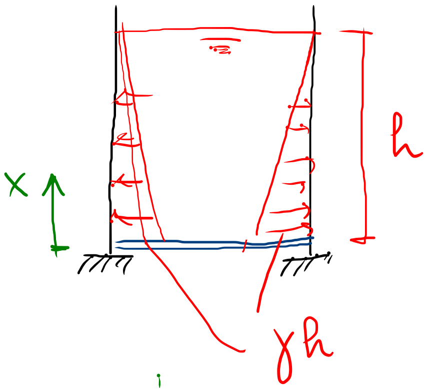
uguaglianza di rotazioni.

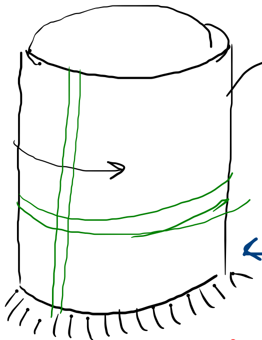
$$\Downarrow$$

$$P_{lim}, P_{cr} = f\,(\text{parametri del problema})$$

ALCUNI PROBLEMI DELLA STATICA DEI SERBATOI CILINDRICI

BELLUZZI vol 3
TIMOSH. PLATES & SHELLS

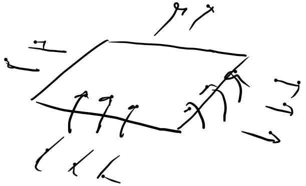




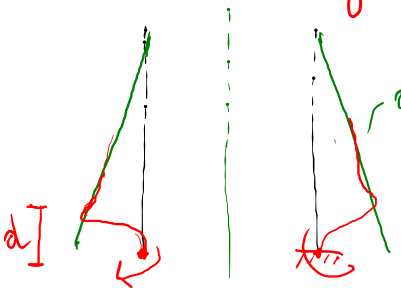
GUSCIO CILINDRICO

STATO DI SOLLECITAZ.

INCASTRO ALLA BASE

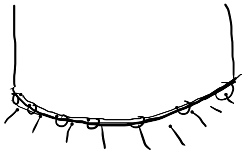


PIASTRE INFLESSE CON UN ASSE DI CURVATURA

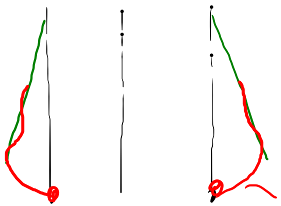


def. dovute al carico idrostatico

L'EFFETTO DELL'INCASTRO SI SMORZA UNA CERTA DISTANZA

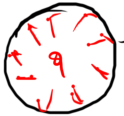


CERNIERE ALLA BASE



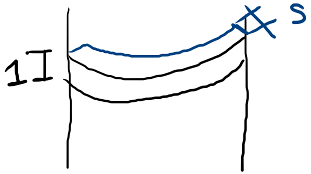
SOLUZ. COMPLETA

STUDIO DEI PARALLELI

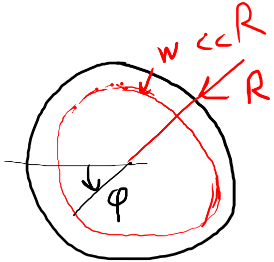


$$N = +qR \Rightarrow \sigma = \frac{N}{A} = q\frac{R}{A}$$

$(\gamma(h-x))$



$$A = s \cdot 1$$



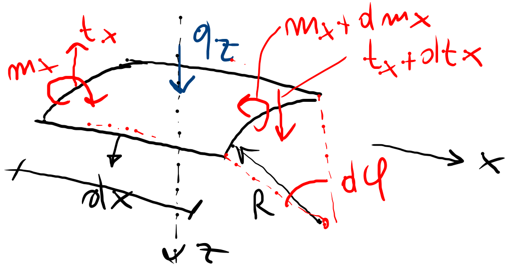
DEFORMAZ. LONGITUDINALE

$$\varepsilon_\varphi = \frac{l - l_0}{l_0} = \frac{2\pi(R-w) - 2\pi R}{2\pi R} = \frac{R - w - R}{R} = -\frac{w}{R}$$

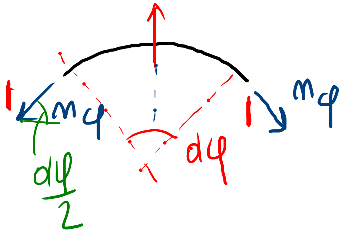
DEFORM < 0 (ACCORCIAMENTO)

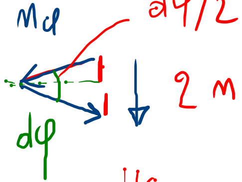
$$\varepsilon_\varphi = \frac{\sigma_\varphi}{E} = \frac{N}{AE} \longrightarrow \frac{N_\varphi}{EA} = -\frac{w}{R} \Rightarrow N_\varphi = -\frac{EA}{R}w \Rightarrow \boxed{n_\varphi = -\frac{E s}{R} w}$$

SF. NORMALE PER UNITÀ DI LUNGHEZZA DEL CILINDRO



$\begin{cases} m \\ t \end{cases}$: AZIONI PER UNITA' DI LUNGHEZZA





$$\downarrow \; 2\, m_\varphi \frac{d\varphi}{2} = m_\varphi \, d\varphi$$

"CONTRIBUTO" DI m_φ ALLE FORZE VERTICALI

SCRIVO EQ DI EQUILIBRIO LUNGO z (VERTICALE)

$$\cancel{t_x} R\, d\varphi - (\cancel{t_x} + dt_x) R\, \cancel{d\varphi} - q_z R\, \cancel{d\varphi}\, dx - m_\varphi\, dx\, \cancel{d\varphi} = 0$$

$$-\frac{dt_x}{dx} - q_z - \frac{m_\varphi}{R} = 0 \quad ; \quad \boxed{\frac{dt_x}{dx} + \frac{m_\varphi}{R} = -q_z}$$

L'EQUIL. ALLA ROTAZIONE FORNISCE

$$\left[\frac{dm_x}{dx} = t_x \right]$$