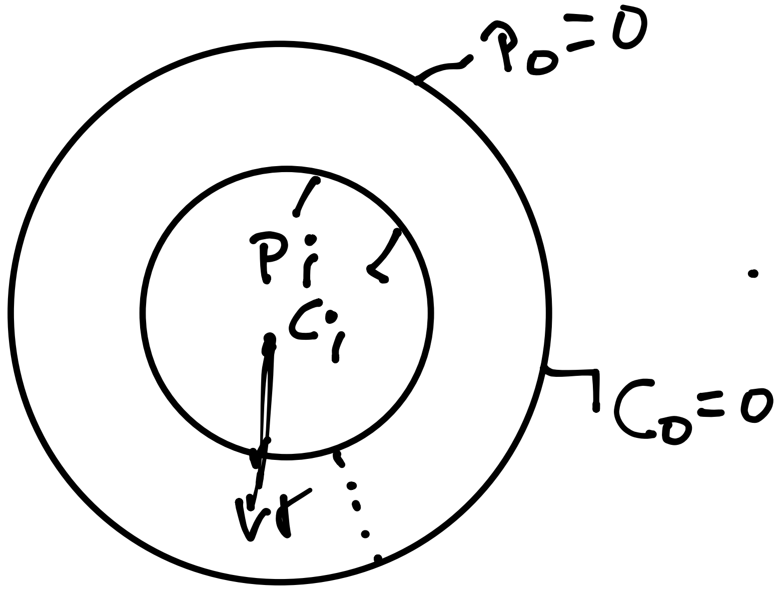

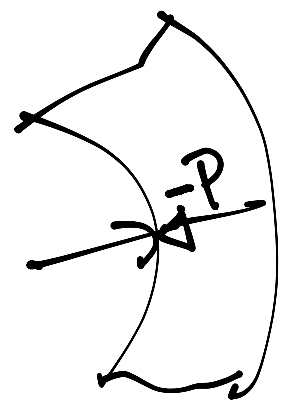

$$\frac{D}{r}\frac{d}{dr}\left(r\frac{dc}{dr}\right)=\frac{dc}{dt}$$

$r=r_i \quad c=C_i$

$r=r_o \quad c=0$

$$\frac{d^2u}{dr^2}+\frac{2}{r}\frac{du}{dr}+\frac{2u}{r^2}=\left(\frac{1+\nu}{1-\nu}\right)\frac{\Omega}{3}\frac{dc}{dr}$$

$r=r_i \quad \sigma=-P$

$\epsilon_r=\frac{1}{r}\frac{du}{dr} \qquad \epsilon_\theta=\frac{u}{r}$

$r = r_i \quad \sigma_r = -p$ why $-p$??

$$\sigma_r = \frac{E}{(1+\nu)(2\nu-1)}\left[(\nu-1)\epsilon_r - \nu\epsilon_\theta + \frac{1}{3}\Omega C\right]$$

$$\frac{E}{(1+\nu)(2\nu-1)}\left[(\nu-1)\frac{du}{dr} - \nu\frac{u}{r} + \frac{1}{3}\Omega C\right] = -p$$

$$(\nu-1)\frac{du}{dr} - \nu\frac{u}{r} = -p\frac{(1+\nu)(2\nu-1)}{E} - \frac{1}{3}\Omega C$$

$r = r_o \quad \sigma_r = 0$

$$(\nu-1)\frac{du}{dr} - \nu\frac{u}{r} = -\frac{1}{3}\Omega C$$

https://pkel015.connect.amazon.auckland.ac.nz/SolidM
Part_II/04_ElasticityPolar/ElasticityPolars_Complete.pdf