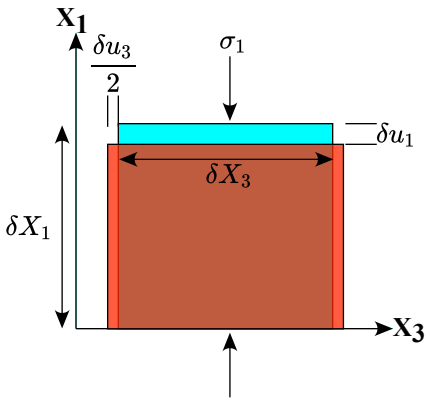
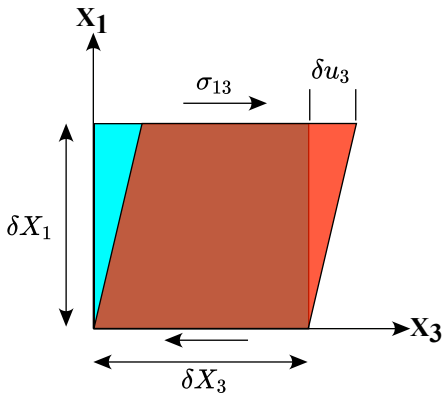
a. Uniaxial stress



$$\varepsilon_{11} = \frac{\delta u_1}{\delta X_1} \qquad \varepsilon_{33} = \frac{\delta u_3}{\delta X_3}$$

$$E = \frac{\sigma_{11}}{\varepsilon_{11}} \qquad \nu = -\frac{\varepsilon_{33}}{\varepsilon_{11}}$$

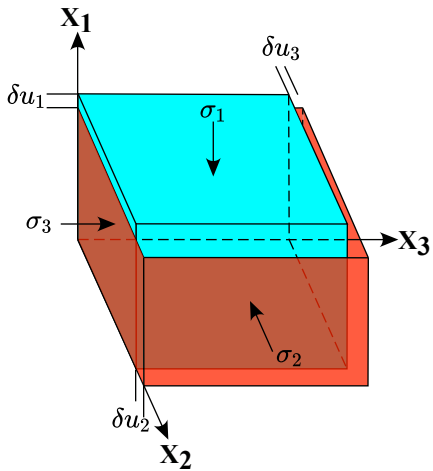
b. Simple shear



$$\gamma_{13} = \frac{\delta u_3}{\delta X_1}$$

$$G = \frac{\sigma_{13}}{\gamma_{13}}$$

c. Triaxial stress



$$\sigma_m = \frac{\sigma_{11} + \sigma_{22} + \sigma_{33}}{3}$$

$$\Delta = \varepsilon_{11} + \varepsilon_{22} + \varepsilon_{33}$$

$$K = \frac{\sigma_m}{\Delta}$$