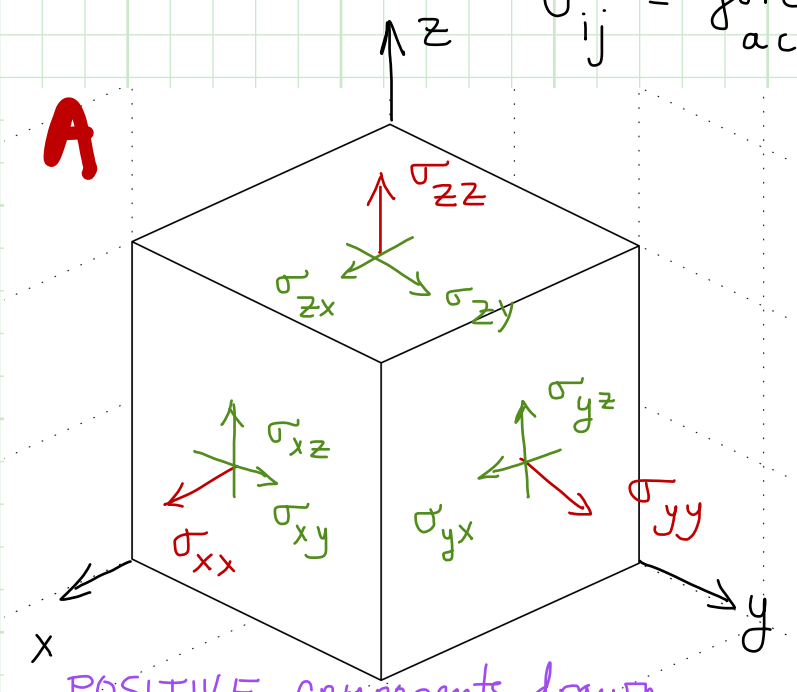
Definitions of the stress tensor components:

σ_{ij} = force per unit area on a plane $\perp$ to $\hat{i}$ acting along $\hat{j}$



POSITIVE components drawn
(Usual Engineering texts)

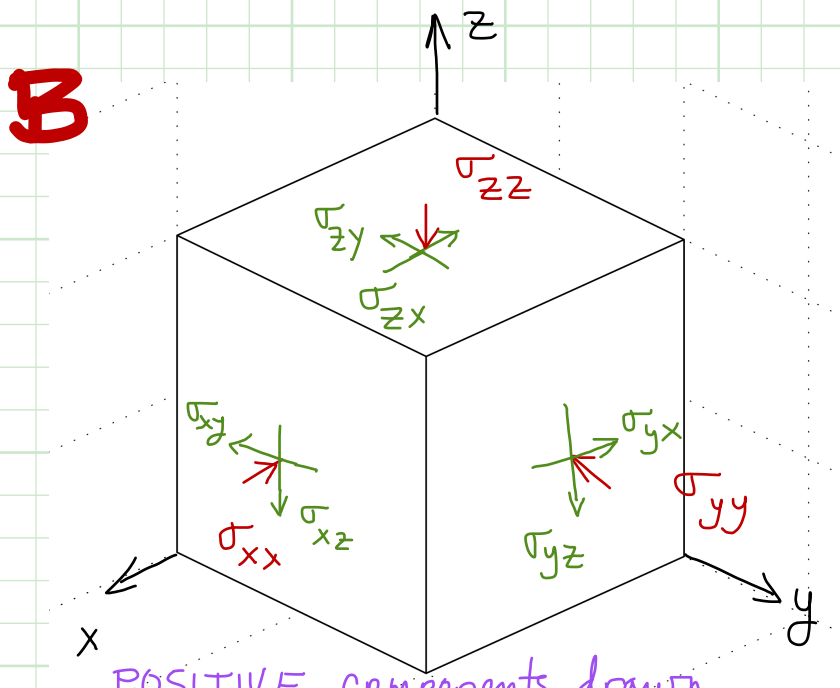
$$\sigma_{ij} = \begin{pmatrix} \sigma_{xx} & \sigma_{xy} & \sigma_{xz} \\ \sigma_{yx} & \sigma_{yy} & \sigma_{yz} \\ \sigma_{zx} & \sigma_{zy} & \sigma_{zz} \end{pmatrix}$$

shear stresses

"normal" stresses

Note about sign convention: (fix a problem in your class notes)

In geology, geophysics, and related fields, compressional stresses are positive. In this case, the stress tensor components are positive as drawn below:



POSITIVE components drawn
(Usual Geophysics texts)
arrows flipped relative to A

In both cases, by conservation of angular momentum,

$$\sigma_{xy} = \sigma_{yx}$$

$$\sigma_{xz} = \sigma_{zx}$$

$$\sigma_{yz} = \sigma_{zy}$$

$\Rightarrow$ SYMMETRIC