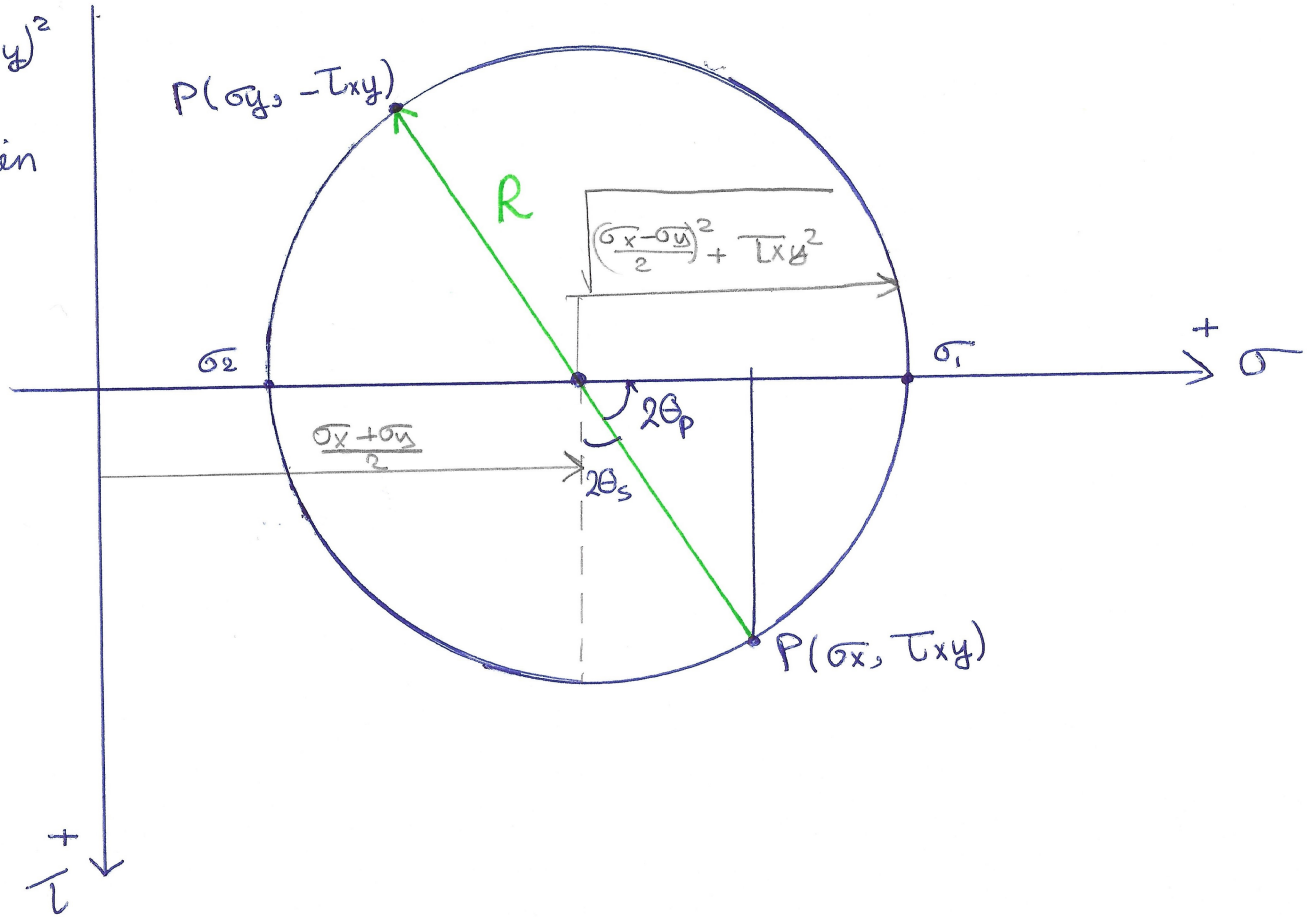
Stress transformation and Mohr's Circle

- Two dimensional case

$$R = \tau_{xy_{max}} = \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + (\tau_{xy})^2}$$

$$\sigma_{1,2} = \frac{\sigma_x + \sigma_y}{2} \pm \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + (\tau_{xy})^2}$$

- All angles are doubled in Mohr's Circle



• 3 dimensional Case

→ To obtain Absolute maximum shear stress

$\tau_{abs\,max} = \frac{\sigma_1}{2}$, $\sigma_1 > \sigma_2$