

A short course on

Stress

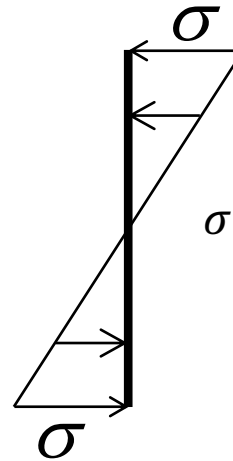
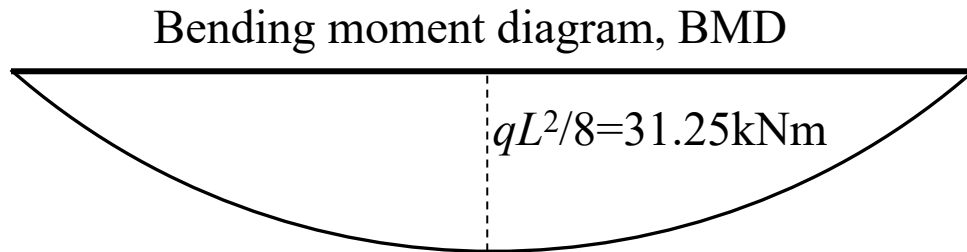
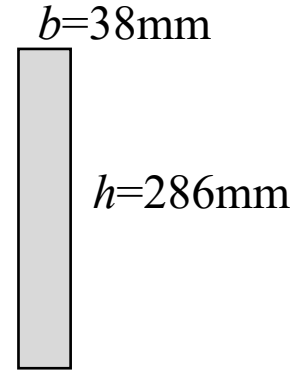
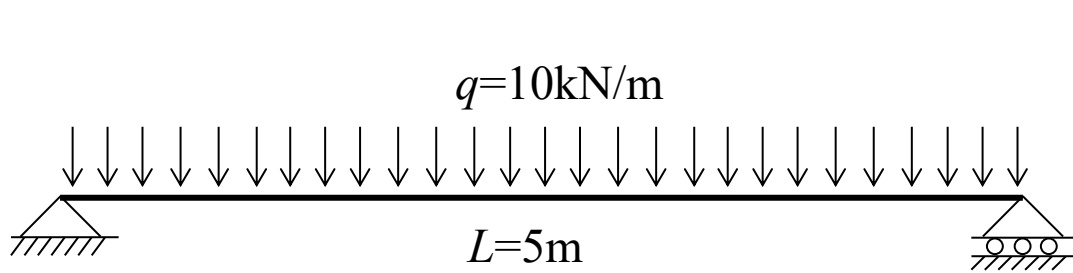
This video:

Stress in a Beam

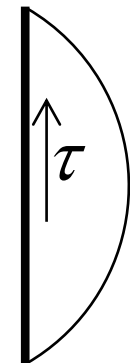
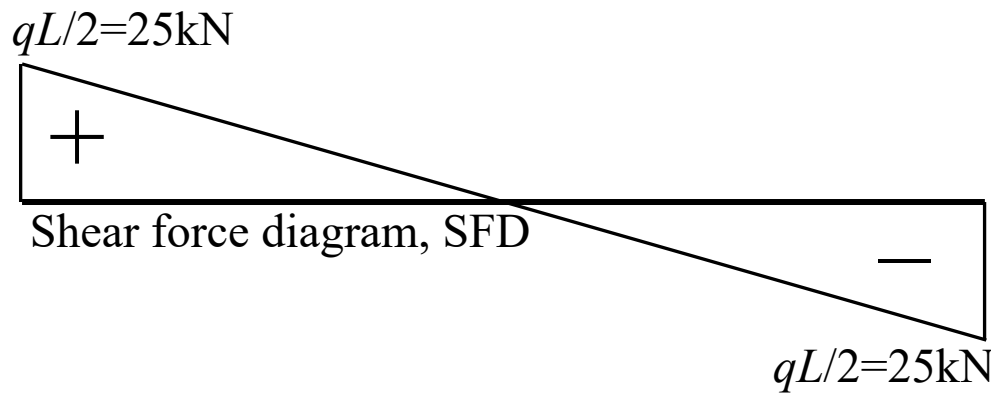
Terje's Toolbox is freely available at terje.civil.ubc.ca

It is created and maintained by Professor Terje Haukaas, Ph.D., P.Eng.,
Department of Civil Engineering, The University of British Columbia (UBC), Vancouver, Canada

Simply Supported Beam

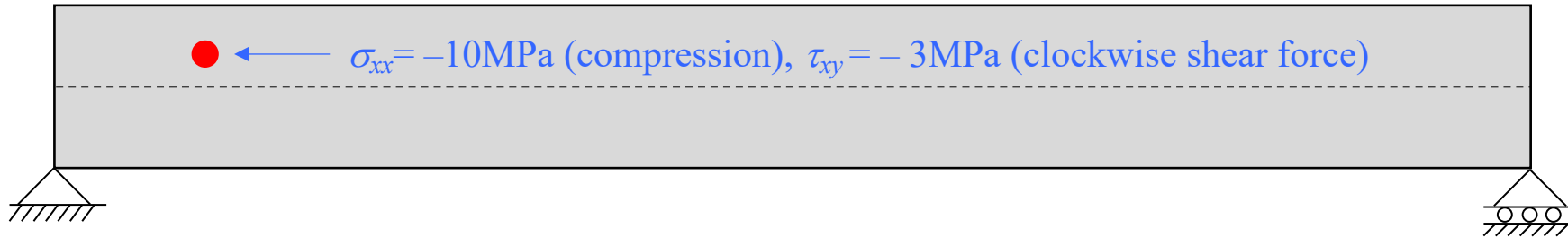


$$\sigma = \frac{M}{I} \cdot z = \frac{31.25}{\left(\frac{0.038 \cdot 0.286^3}{12}\right)} \cdot \frac{0.286}{2} = 60.3\text{MPa}$$



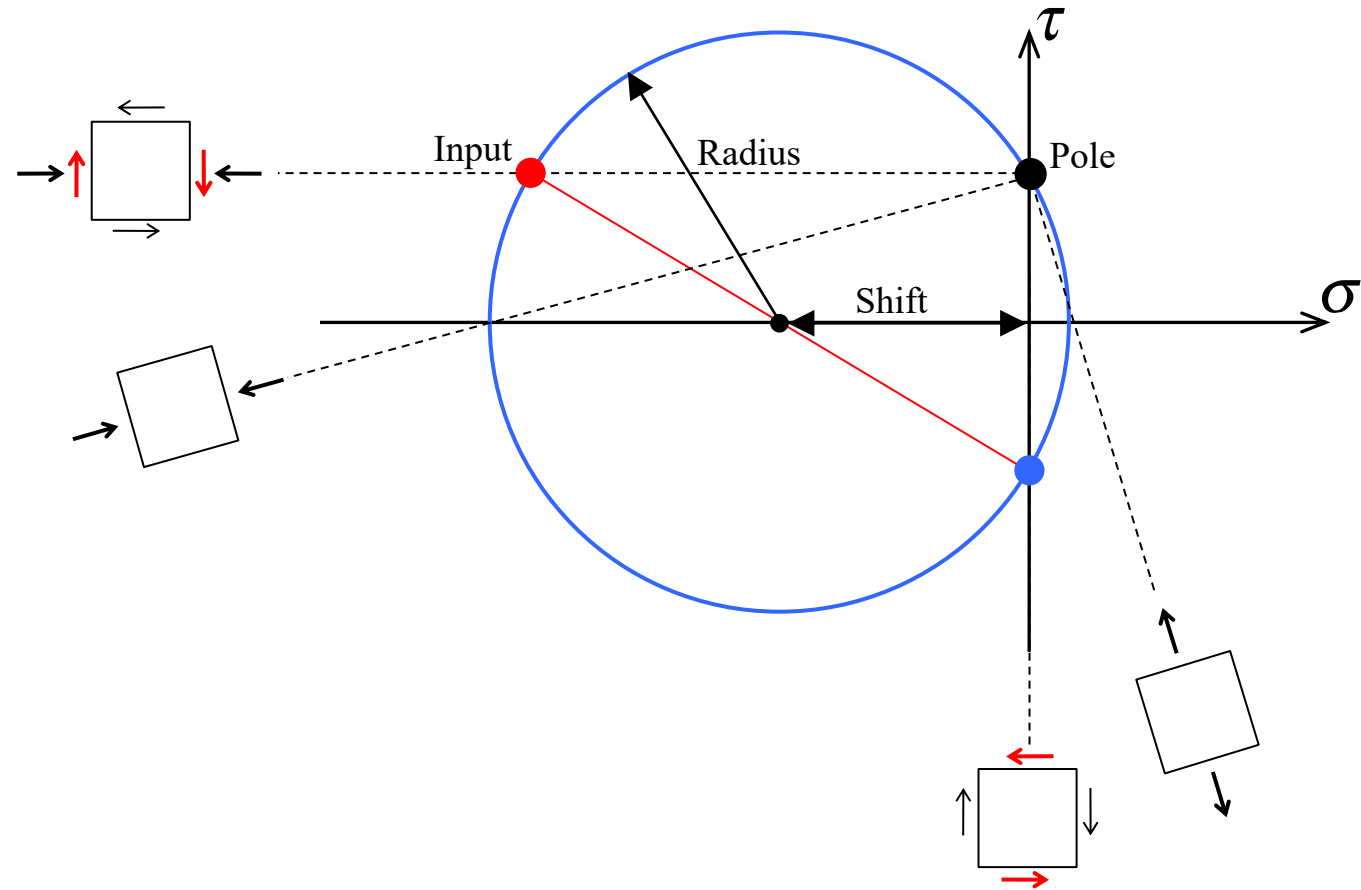
$$\tau = \frac{3}{2} \cdot \frac{V}{A} = \frac{3}{2} \cdot \frac{25}{0.038 \cdot 0.286} = 3.45\text{MPa}$$

Upper-left

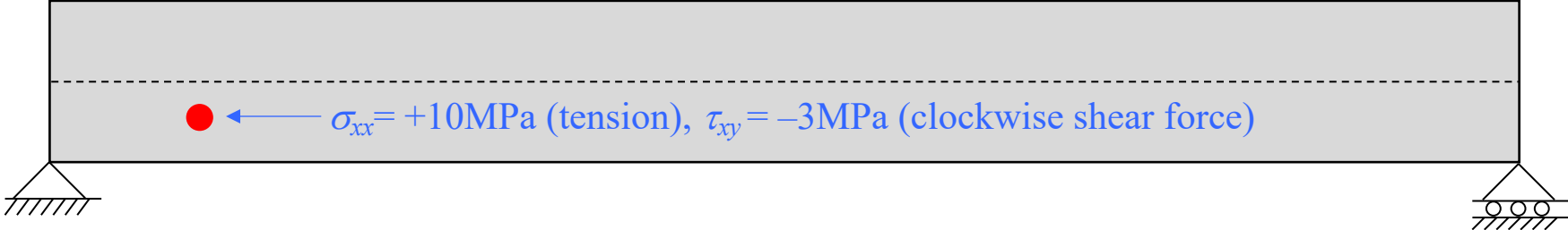


$$\text{Shift} = \frac{\sigma_{xx} + \sigma_{yy}}{2} = \frac{-10 + 0}{2} = -5$$

$$\text{Radius} = \sqrt{\left(\frac{-10 + 0}{2}\right)^2 + (-3)^2} = 5.83$$

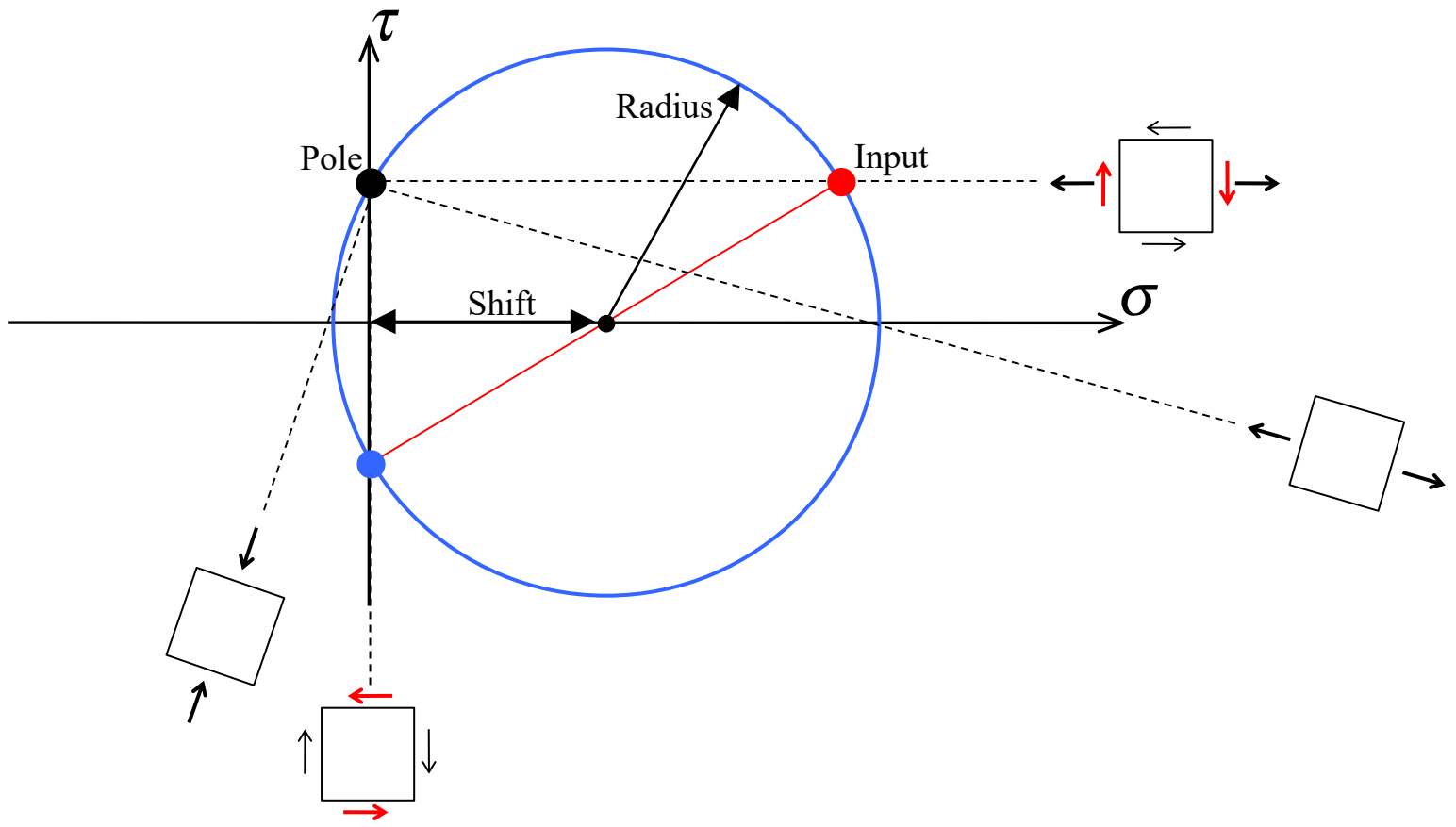


Lower-left

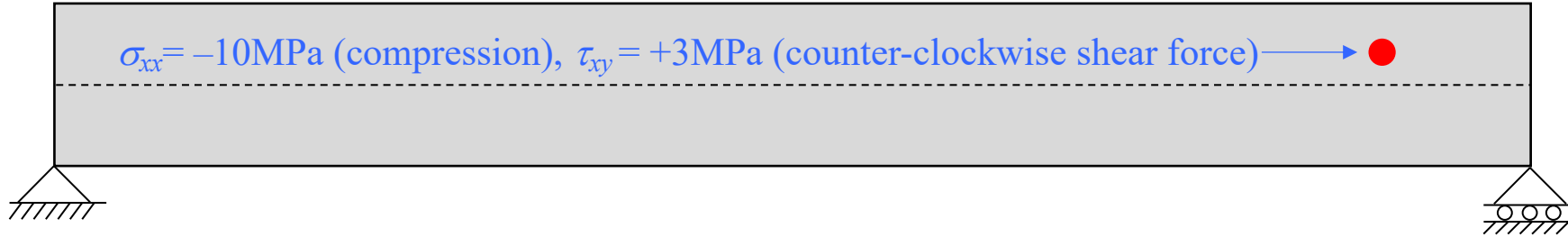


$$\text{Shift} = \frac{\sigma_{xx} + \sigma_{yy}}{2} = \frac{10 + 0}{2} = 5$$

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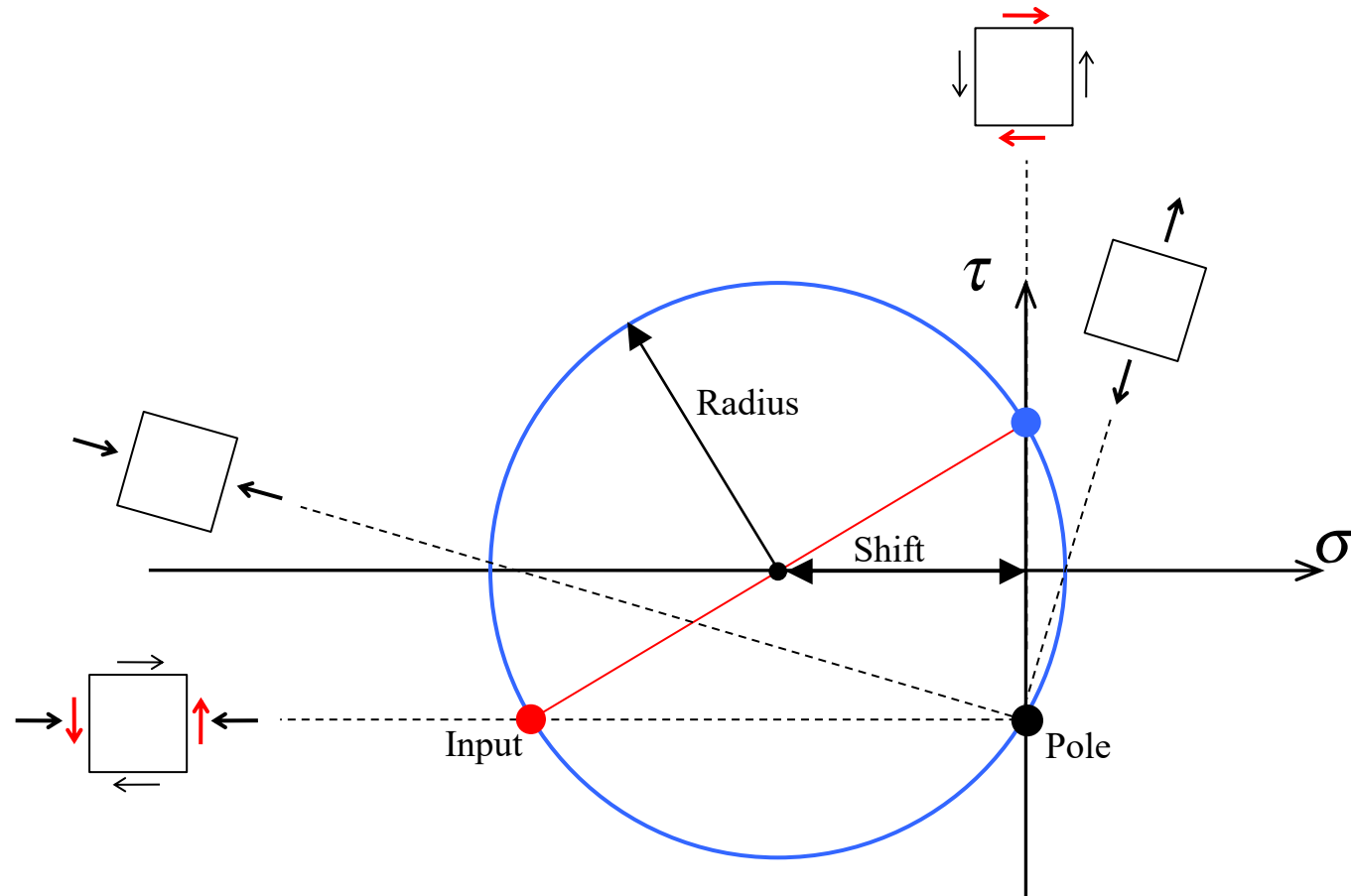


Upper-right

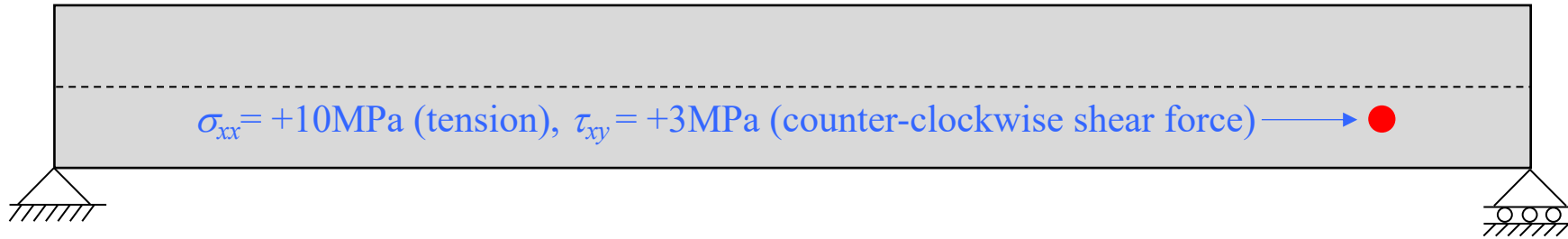


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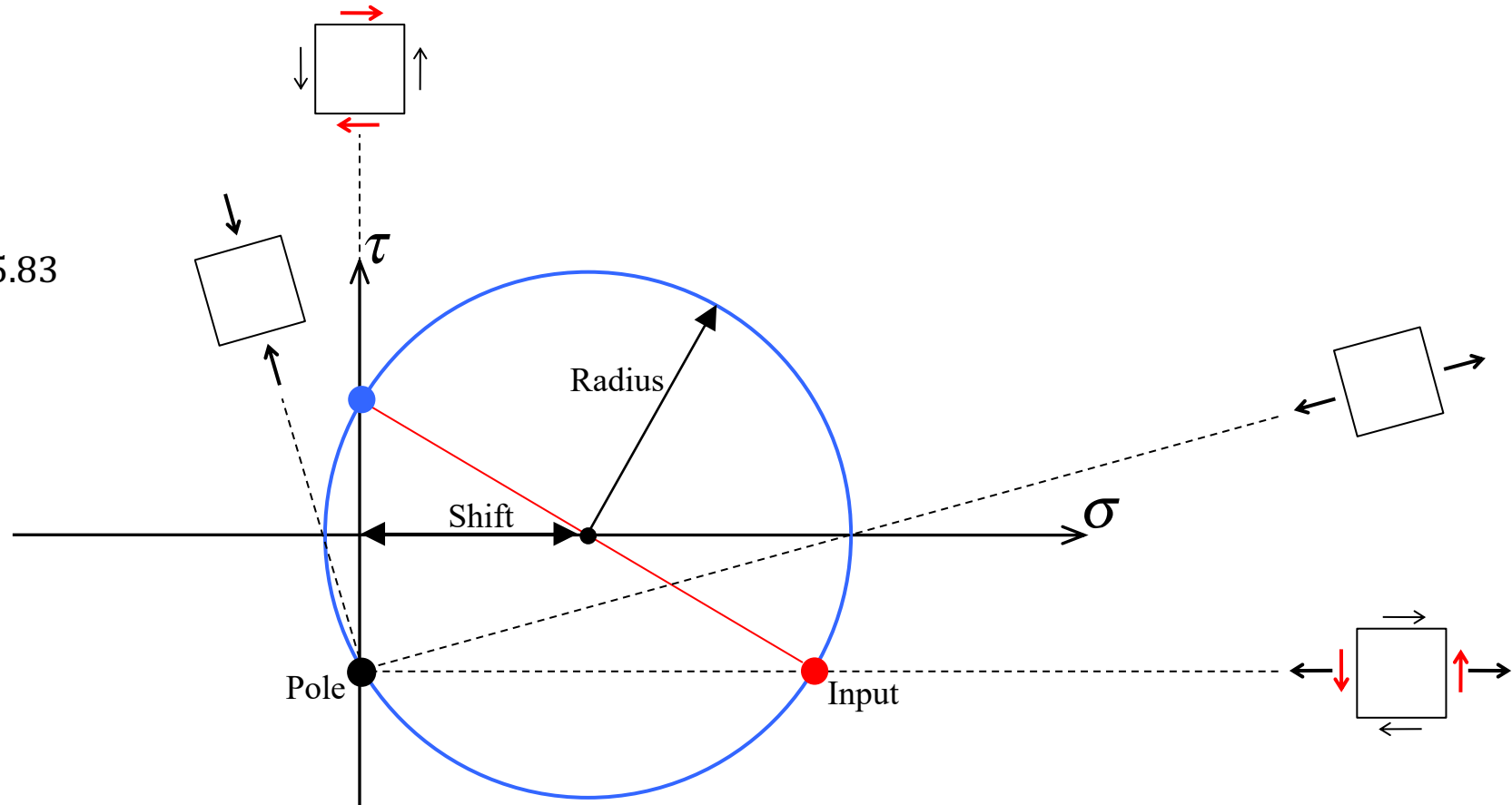


Lower-right

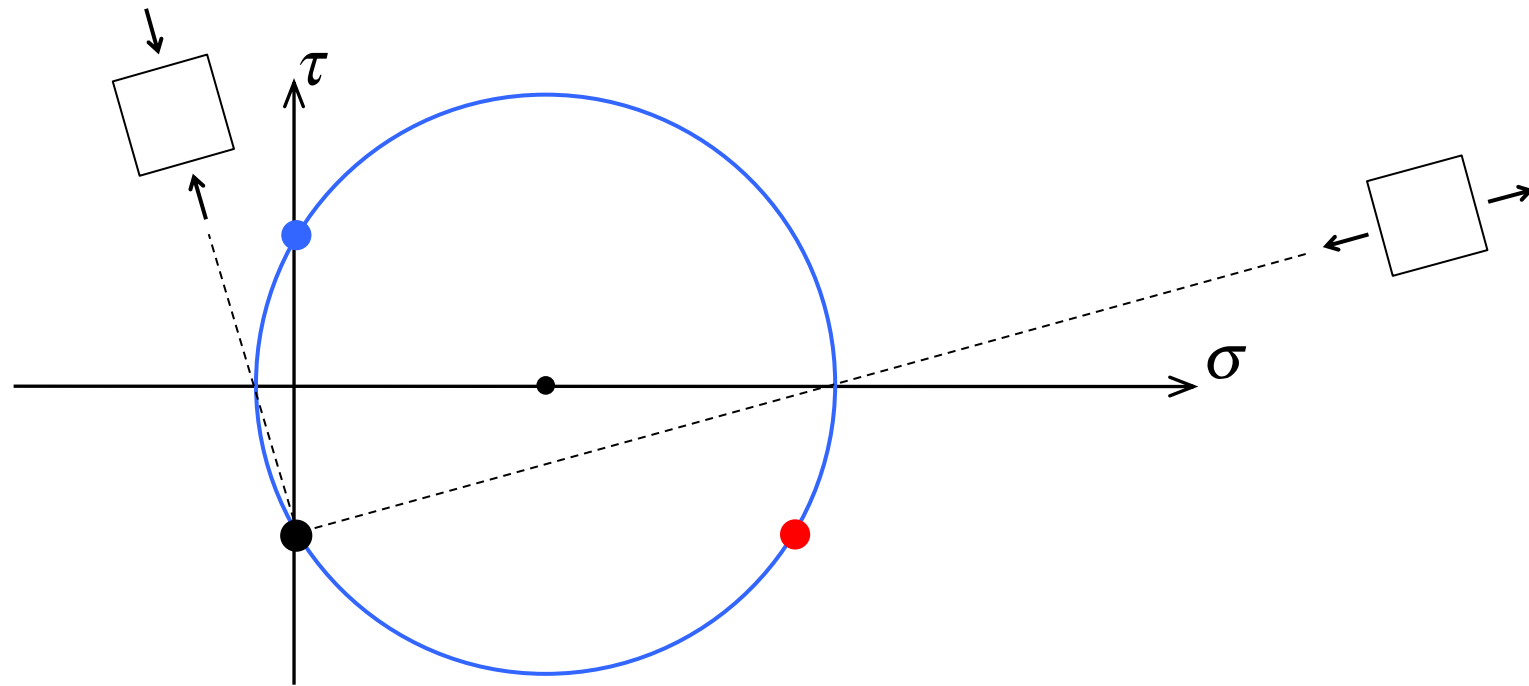
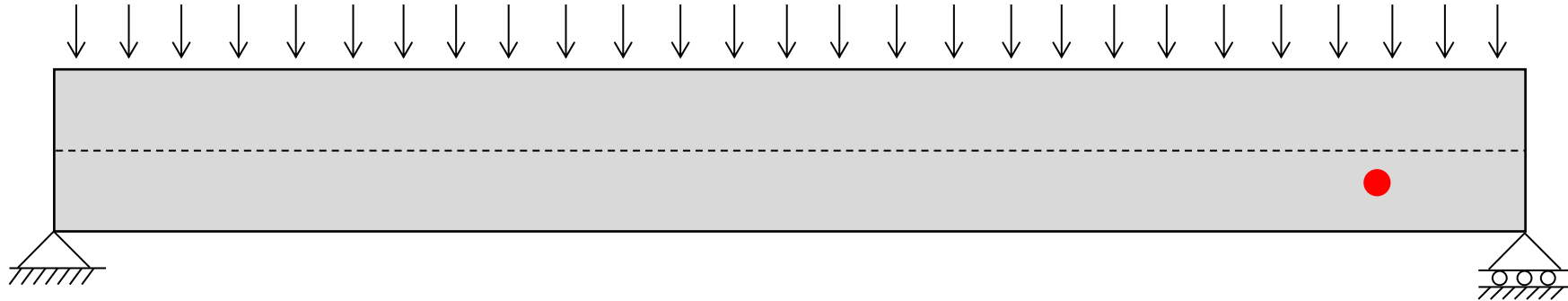


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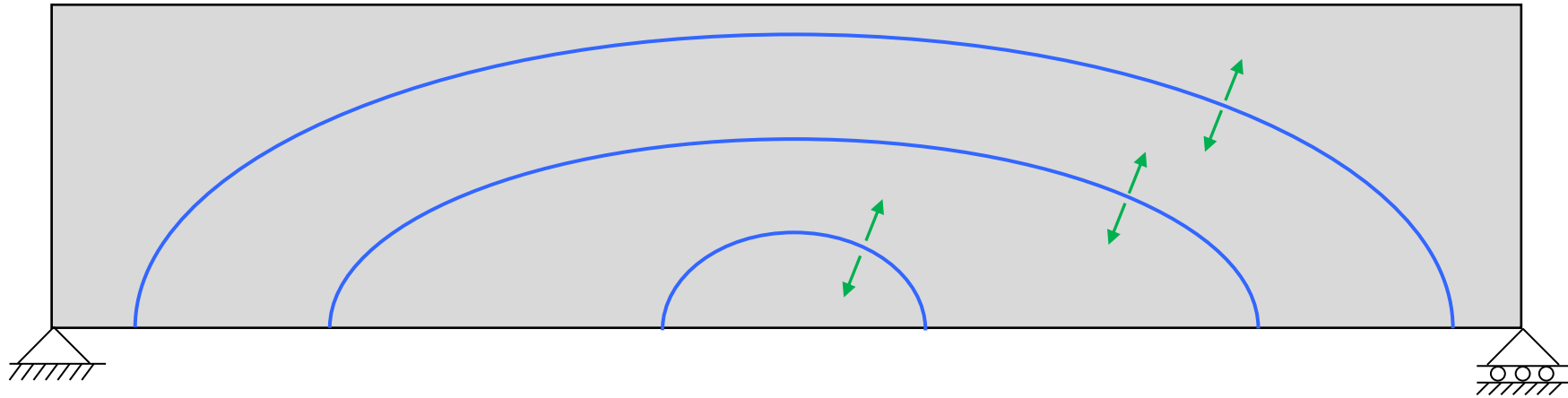
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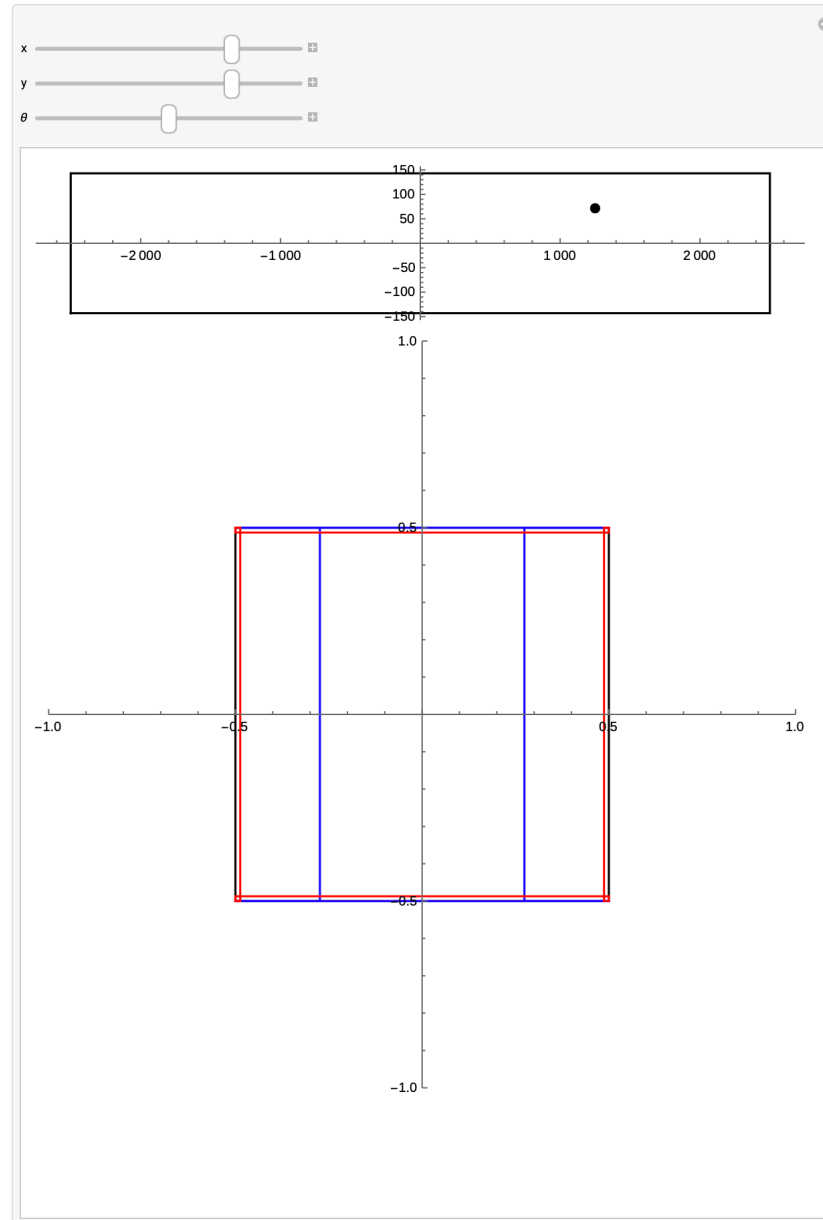
Principal Stress



Trajectories



Visualization



More lectures:

Terje's Toolbox:

terje.civil.ubc.ca