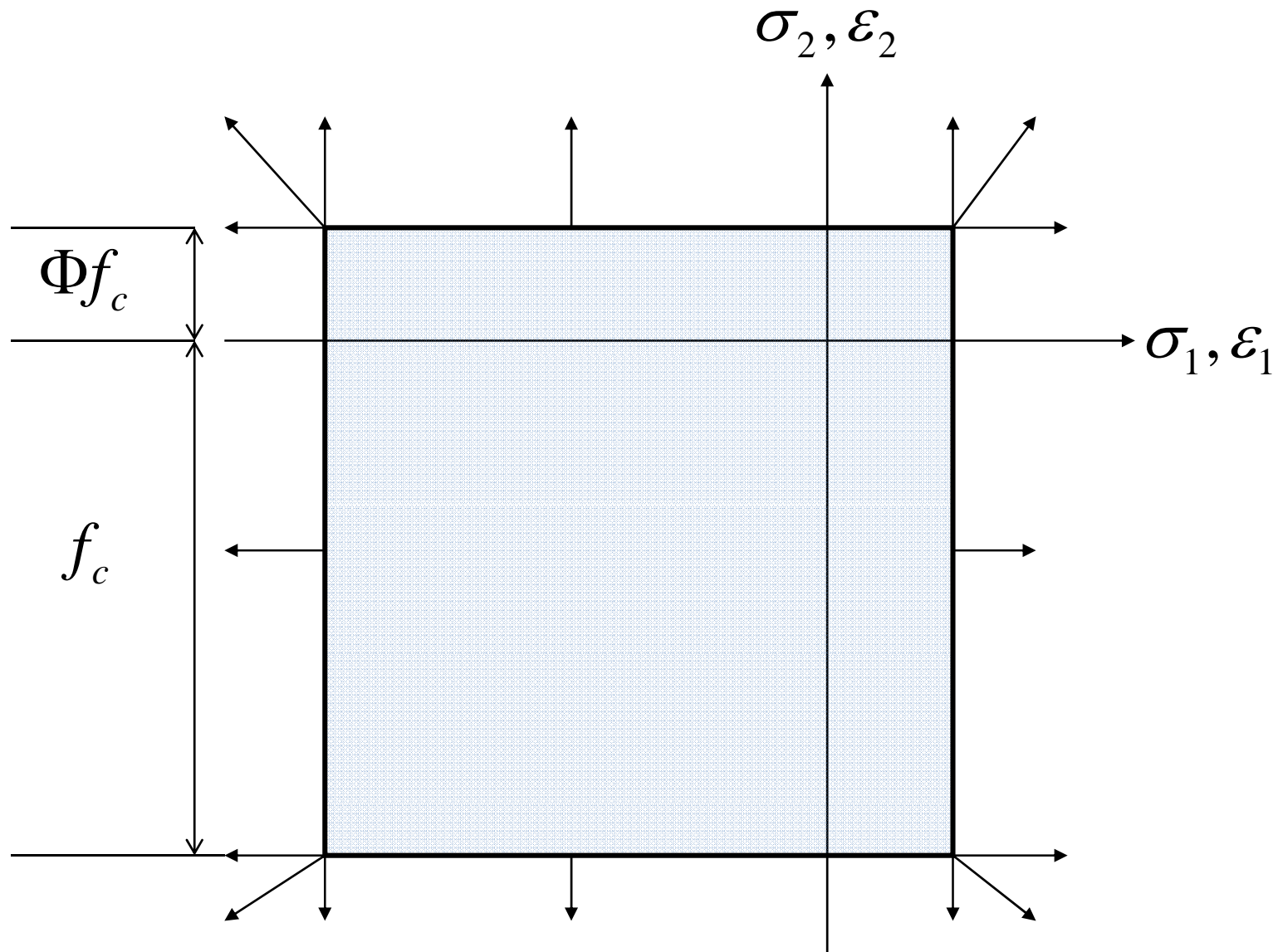


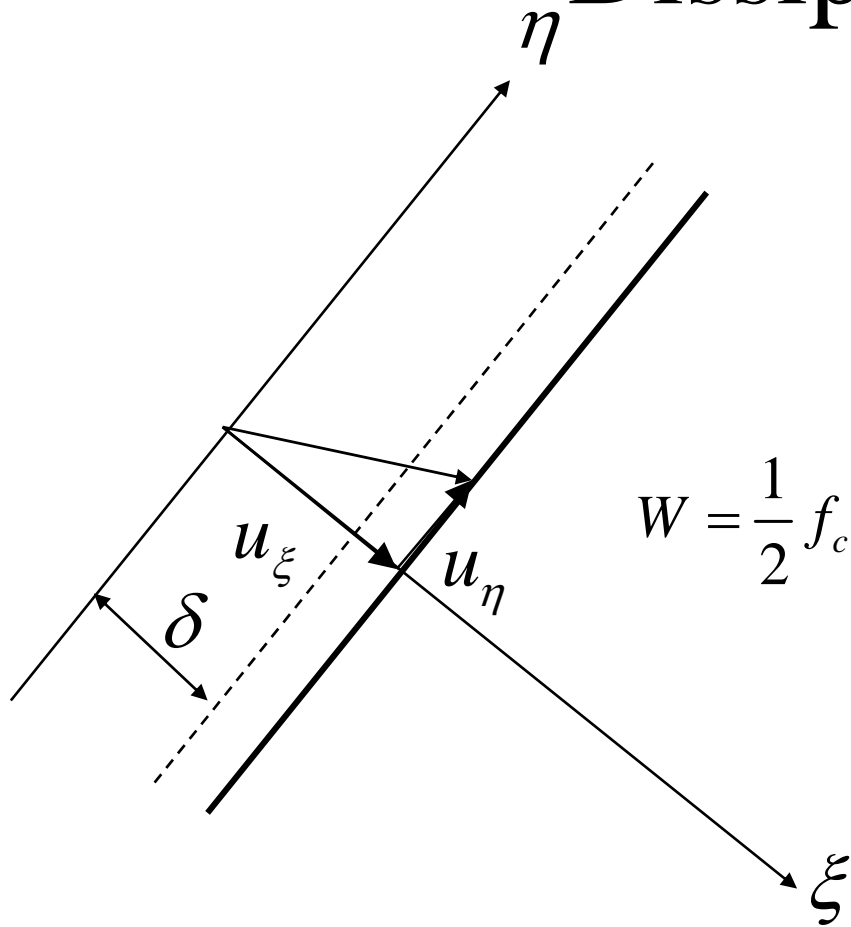
Disks

- Constitutive Equations
- Dissipation Works
- Yield Zones
- Applications
- Strength Reduction due to Initial Cracks
- Strut and Tie Models
- Shear Walls

Disk Element

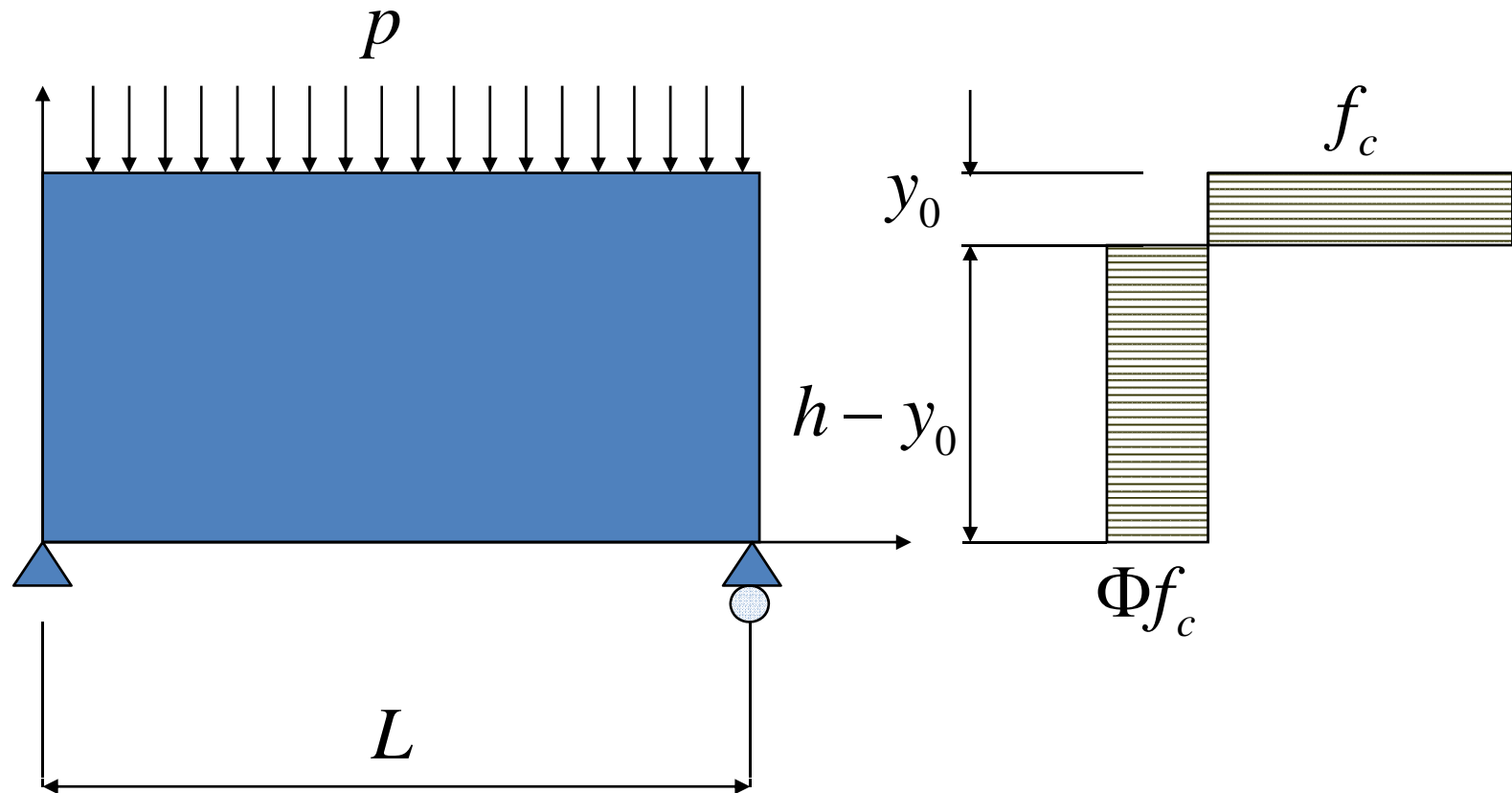


Dissipation



$$W = \frac{1}{2} f_c \left[(1 + \Phi) \sqrt{\left(\frac{u_\xi}{\delta}\right)^2 + \left(\frac{u_\eta}{\delta}\right)^2} - (1 - \Phi) \frac{u_\xi}{\delta} \right]$$

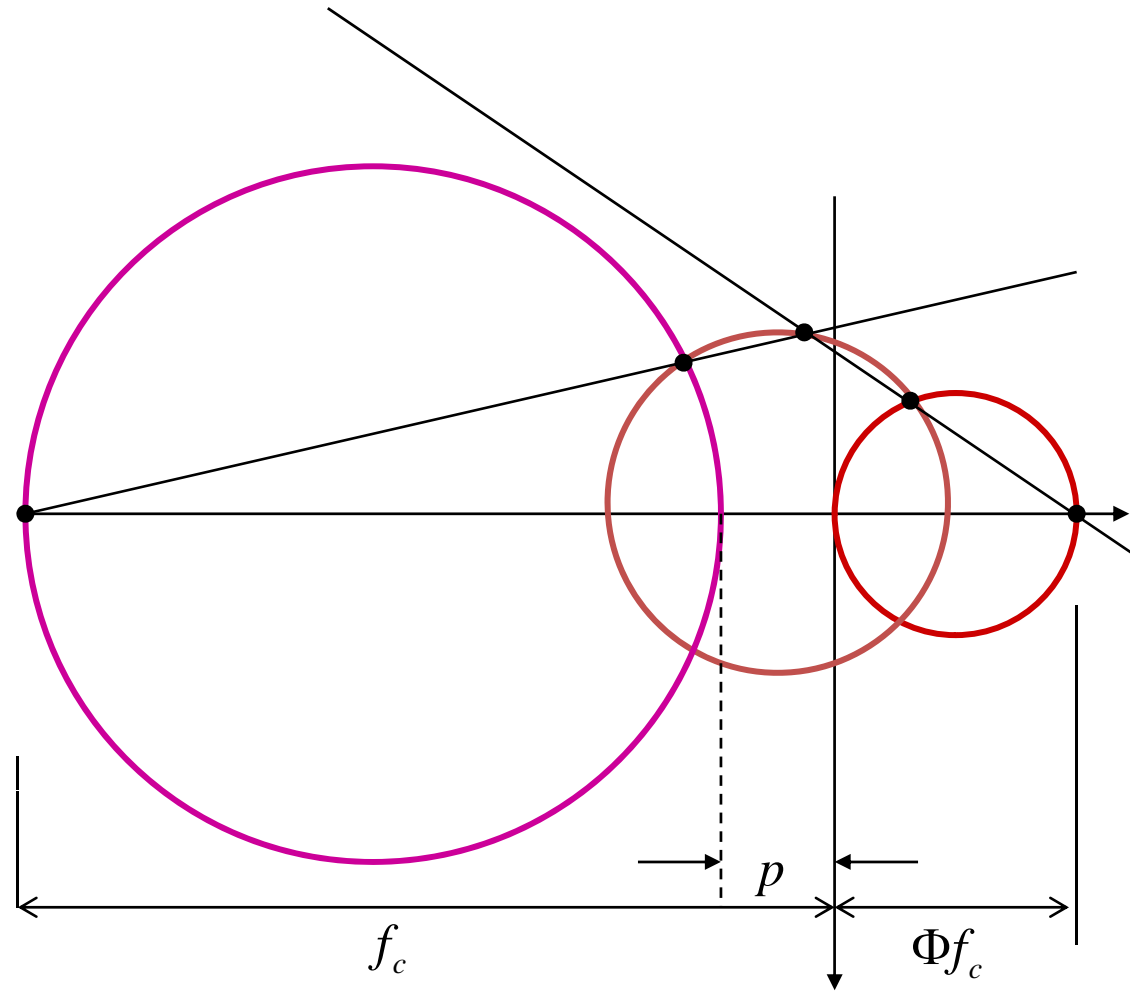
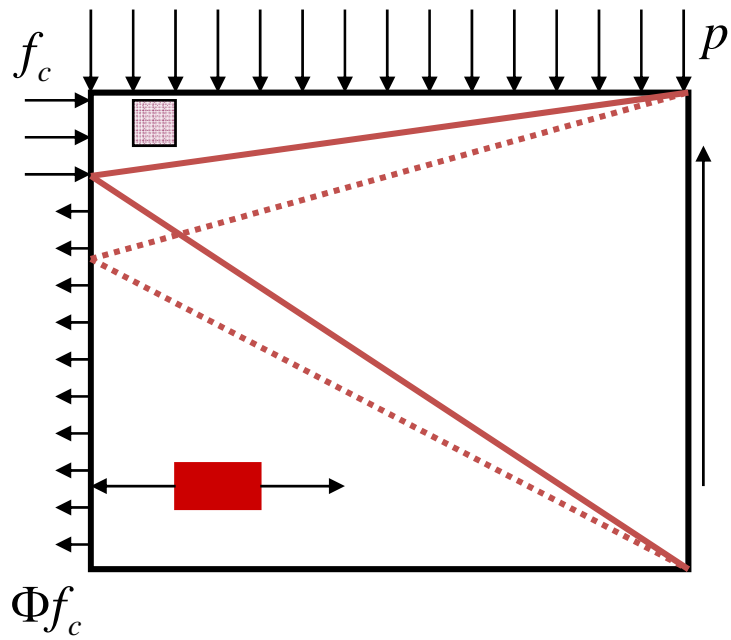
Known Solutions



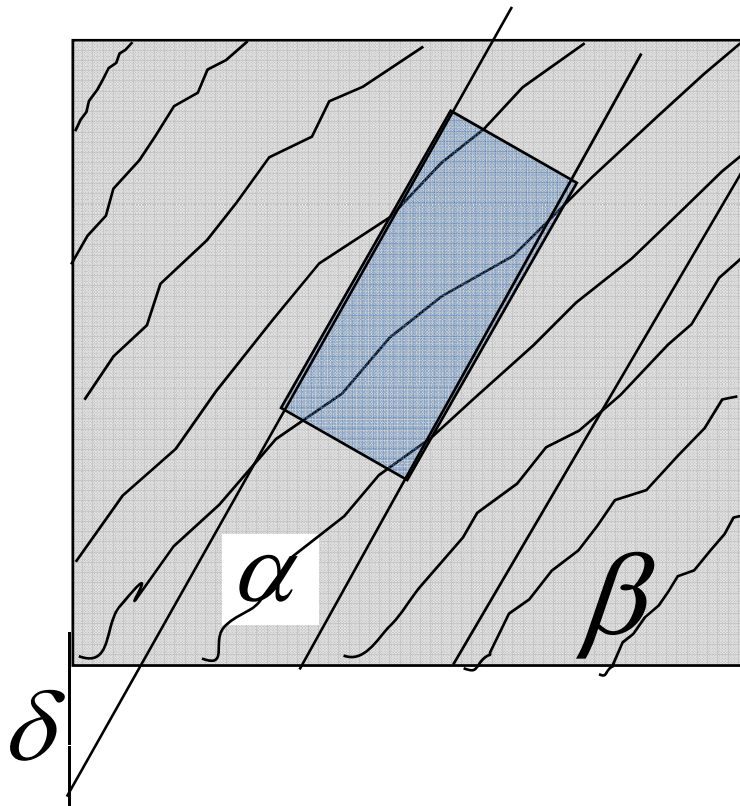
$$M_p = \frac{1}{2} \frac{\Phi}{1 + \Phi} t h^2 f_c$$

$$p = \frac{4\Phi h^2 f_c}{(1 + \Phi) L^2}$$

Discontinuous Stress Fields



Strength Reduction due to Sliding in Initial Cracks



$$\frac{f_{cs}}{v_o f_c} = \frac{\frac{1}{4} v_s}{|\sin \gamma \cos \gamma| - 0.75 \sin^2 \gamma} \leq 1$$