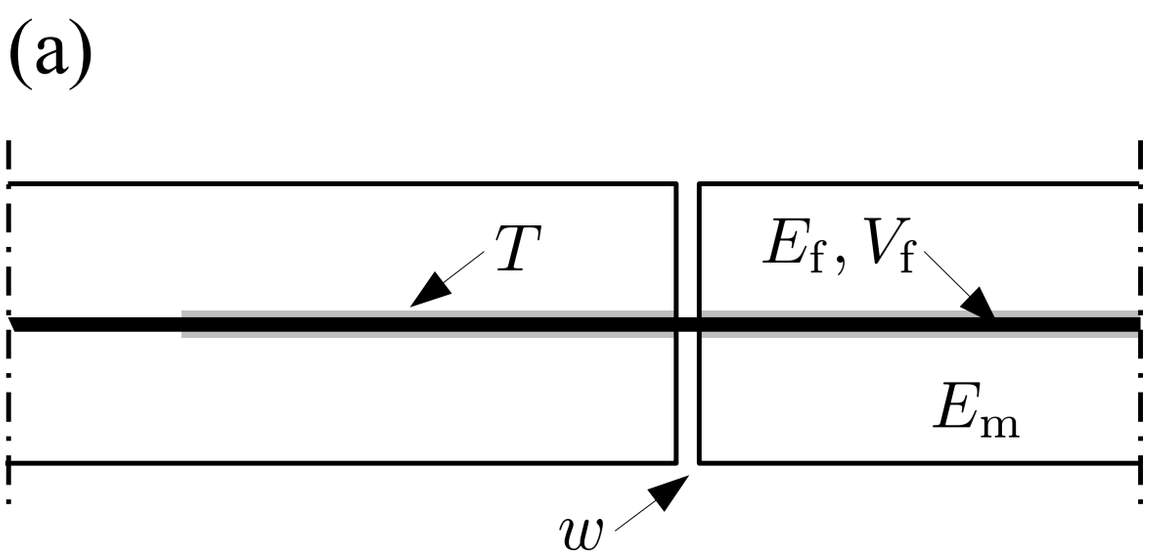


E_m : matrix stiffness

E_f : reinforcement stiffness

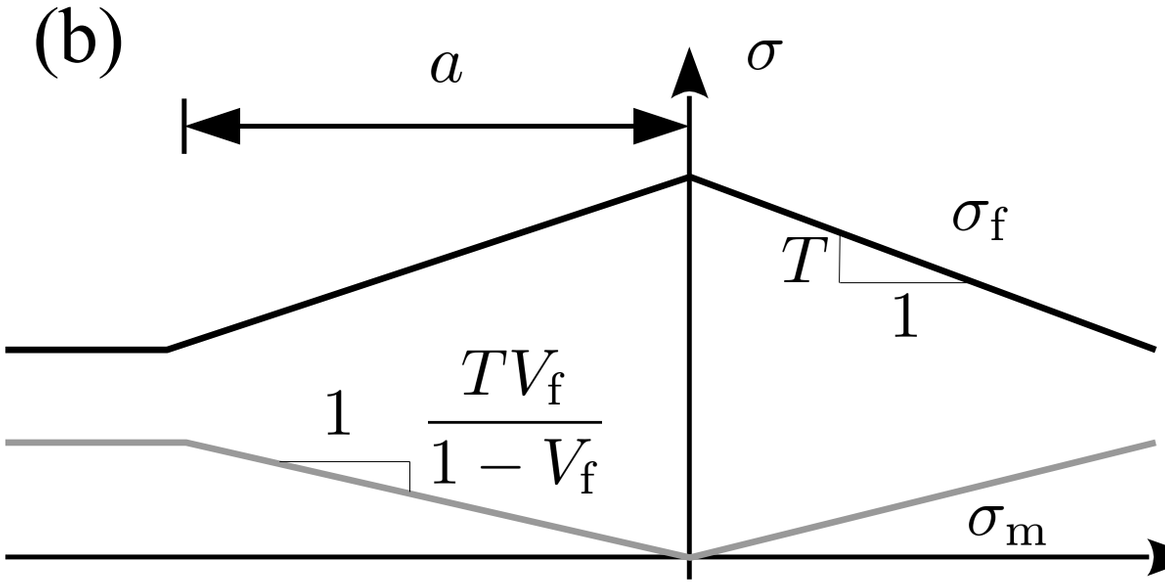
E_c : composite stiffness given by Eq. (1)

T : bond intentsity

V_f : reiforcement volume fraction

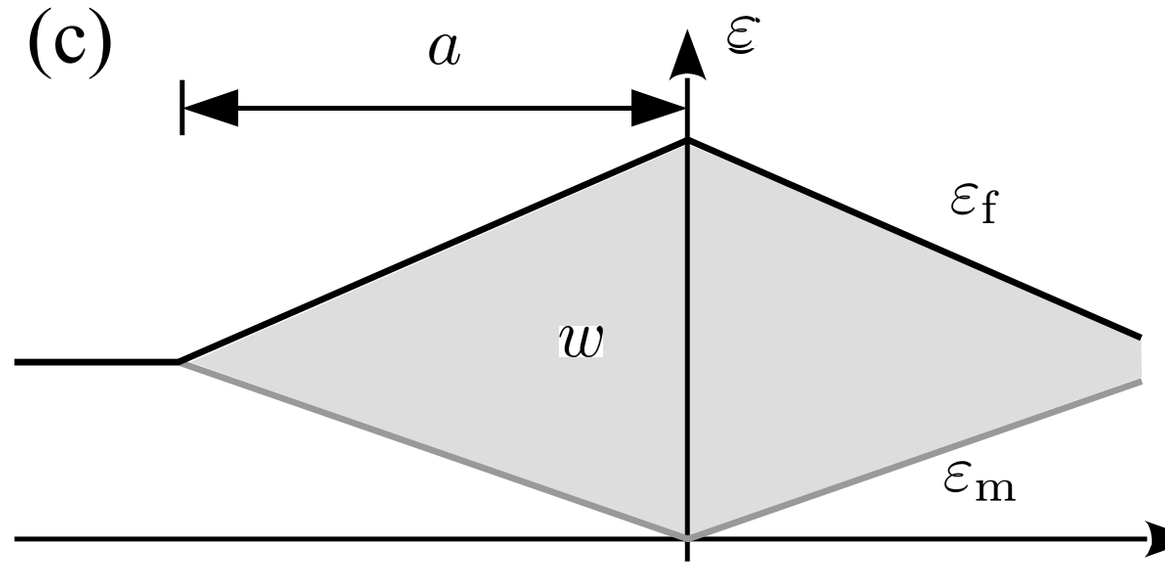
σ_c : remote stress

w : crack opening



$$\sigma_\mathrm{m} = \begin{cases} \dfrac{TV_\mathrm{f}}{1-V_\mathrm{f}}|z| : |z| < a \\ \dfrac{\sigma_\mathrm{c}E_\mathrm{m}}{E_\mathrm{c}} : |z| \geq a \end{cases}$$

$$a = \frac{\sigma_\mathrm{c}E_\mathrm{m}(1-V_\mathrm{f})}{E_\mathrm{c}TV_\mathrm{f}}$$



$$\varepsilon_\mathrm{f} = \frac{\sigma_\mathrm{c} - (1-V_\mathrm{f})\sigma_\mathrm{m}}{E_\mathrm{f}V_\mathrm{f}}$$

$$\varepsilon_\mathrm{m} = \sigma_\mathrm{m}/E_\mathrm{m}$$

$$w = \int (\varepsilon_\mathrm{f} - \varepsilon_\mathrm{m})\,\mathrm{d}z$$