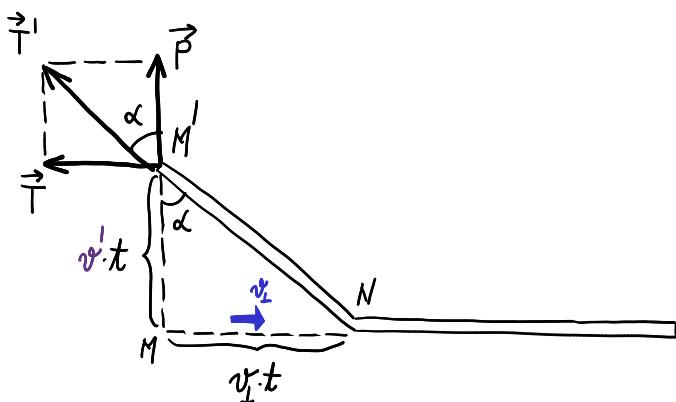
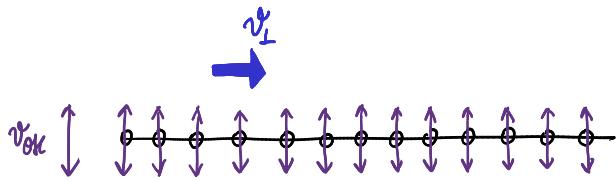


VITEZA DE PROPAGARE A UNDELOR

UNDE TRANSVERSALE



$$\tan \alpha = \frac{T}{P} = \frac{v_{\perp}}{v'_{\perp}} \Rightarrow P = T \cdot \frac{v'_{\perp}}{v_{\perp}}$$

$$P \cdot \Delta t = m \cdot \Delta v \quad , \quad \mu = \frac{m}{v_{\perp} \cdot t} \\ \Delta v = v'_{\perp} - v_{\perp}$$

$$\Rightarrow T \frac{v'_{\perp}}{v_{\perp} \cdot t} = \mu \cdot v_{\perp} \cdot t / (v'_{\perp} - v_{\perp})$$

$$v_{\perp} = \sqrt{\frac{T}{\mu}}$$

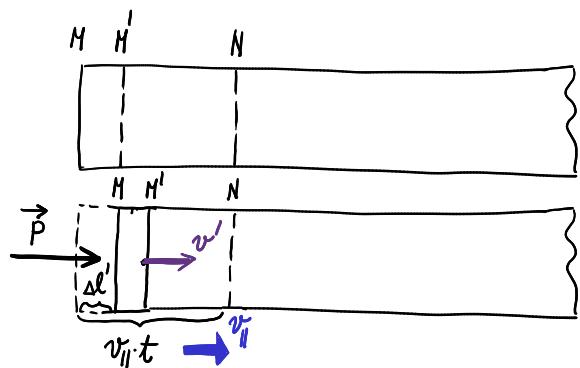
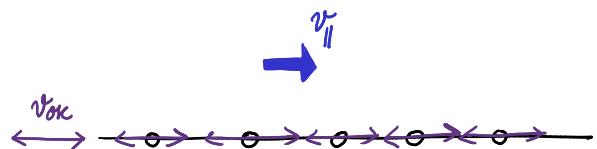
v_{\perp} = viteza undelor transversale

T = forță de tensiune

μ = masa unității de lungime

v_{\perp} depinde doar de proprietățile mediului

UNDE LONGITUDINALE



$$\frac{P}{S} = E \cdot \frac{M M'}{M N}$$

$$\frac{P}{S} = E \cdot \frac{\Delta l'}{v_{\parallel} \cdot t} \quad , \quad \rho = \frac{m}{S \cdot \Delta l'}$$

$$\Rightarrow m = \rho \cdot S \cdot \Delta l' = \rho \cdot S \cdot \frac{P \cdot v_{\parallel} \cdot t}{E} = \rho \cdot P \cdot \frac{v_{\parallel} \cdot t}{E}$$

$$P \cdot t = m \cdot \Delta v$$

$$P \cdot t = \frac{\rho \cdot P \cdot v_{\parallel} \cdot t}{E} \cdot (v_{\parallel} - 0)$$

$$v_{\parallel} = \sqrt{\frac{E}{\rho}}$$

v = viteza undelor longitudinale

E = modulul de elasticitate Young

ρ = densitatea

v_{\parallel} depinde doar de proprietățile mediului