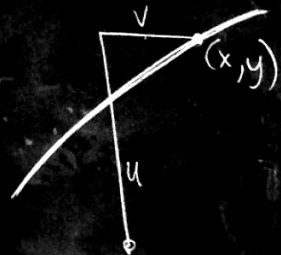


Wave Equation

Assume

- (1) $y = u(x, t)$
- (2) Ignore v
- (3) Tension = constant = T_0
- (4) perfectly flexible
- (5) $\rho_0(x) = \text{mass density} = \rho_0$



$$\rho_0(x) u_{tt} = T_0 u_{xx} + Q(x, t) \rho_0(x) \quad Q = -g \text{ usually}$$

$$\rho_0 u_{tt} = T_0 u_{xx} \quad Q = 0$$

$$u_{tt} = c^2 u_{xx} \quad \frac{T_0}{\rho_0} \equiv c^2, \quad c = \text{Wave Speed}$$