

PDE Examples

Heat eq'n $\frac{\partial u}{\partial t} = \alpha \nabla^2 u$

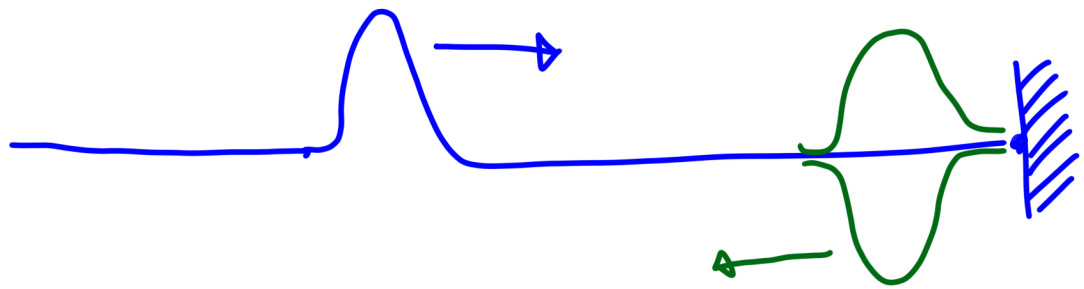
Poisson eq'n $\nabla^2 f = 0$

Navier Stokes $\frac{\partial}{\partial t} (\rho u) + \nabla \cdot (\rho u \times u) = -\nabla p + \nabla \cdot \tau + \rho g$

CFD numerical solution to this eq'n

Wave eq'n $\frac{\partial^2 u}{\partial t^2} = c^2 \nabla^2 u$

rope



Maxwell's eq'n

$$\frac{d}{dt} \iint_{\Sigma} B \cdot ds = \iint_{\Sigma} \frac{\partial B}{\partial t} \cdot ds$$

Gauss's law $\nabla \cdot E = \frac{\rho}{\epsilon_0}$

Maxwell-Faraday eq'n $\nabla \times E = -\frac{\partial B}{\partial t}$

Column Buckling

uses PDE in derivation

