E157 Lecture 2 Day Plan

Clarify rule of thumb: lambda/10 < S ... have problems when lambda starts to approach t line length

Any questions before quiz

Quiz + Team Quiz + Talk through solution

Extracting Velocity from wave equations:

- EM waves: \( \frac{d^2E}{dx^2} = \mu_0\varepsilon_0 \frac{d^2E}{dt^2} \rightarrow \sqrt{\frac{1}{\mu_0\varepsilon_0}} \)
  - Note: index of refraction = \( c/c_{\text{medium}} \)
- Sound waves: \( \frac{d^2p}{dx^2} = \rho_0/B \frac{d^2p}{dt^2} \rightarrow \sqrt{\frac{B}{\rho}} \)

Derive diffusion equation from rc wire model – \( \frac{d^v}{dx^2} = rc \frac{dv}{dt} \)