2.1

Last time: Particles

Today: Waves

\[ \sin(x-t) \quad \text{moves} \quad \rightarrow \]

\[ \sin(x+t) \quad \text{moves} \quad \leftarrow \]
2.2

MATHEMATICALLY
WAVES
SOLVE

WAVE EQUATIONS

\[
\left( \frac{1}{c^2} \frac{\partial^2}{\partial t^2} - \frac{\partial^2}{\partial x^2} \right) u = 0
\]

Solutions:

\[
f(x - ct) \\
g(x + ct)
\]
2.3 speed of propagation

INCREASE C in our MATLAB MOIYE & THE WAVES MOVE FASTER

SUPERPOSITION PRINCIPLE

\[ u(x,t) = f(x-ct) + g(x+ct) \]
2.4

Which one is right?

After over 150 years of bitter arguments, it was resolved once and for all that waves give a better description.

Fresnel, Arago, Poisson 1818

Look for Poisson spot on line!