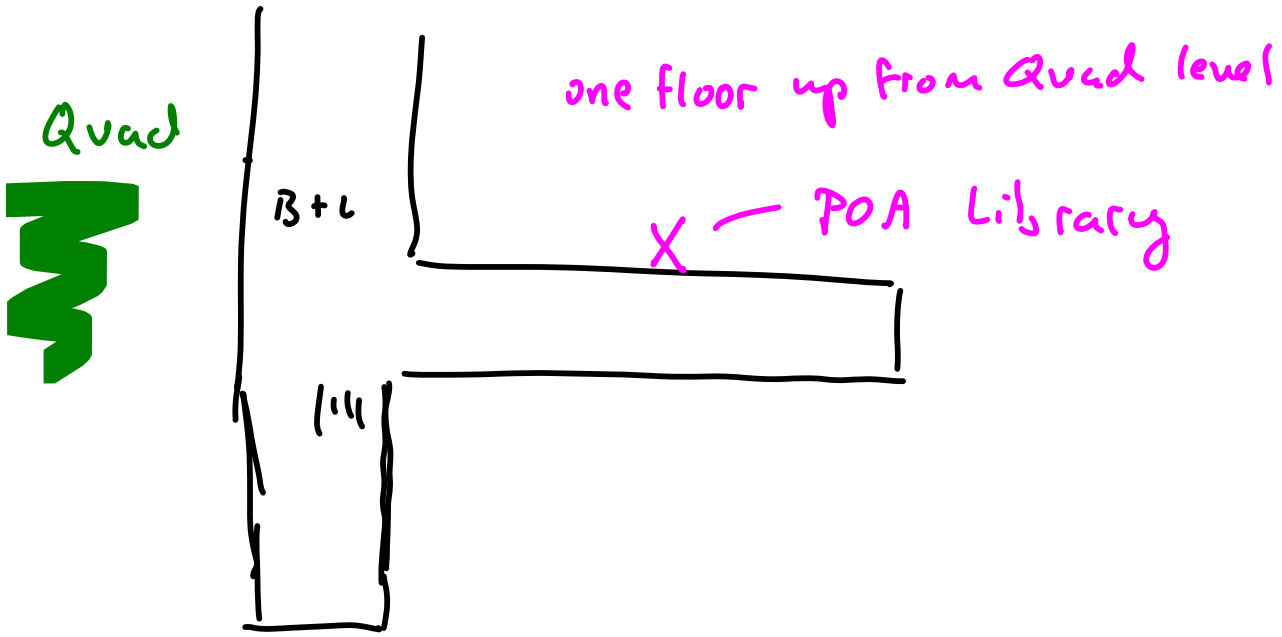
Physics 102 - Feb. 2, 2011

- Visions of Multiverse Available here and on Reserve in POA library

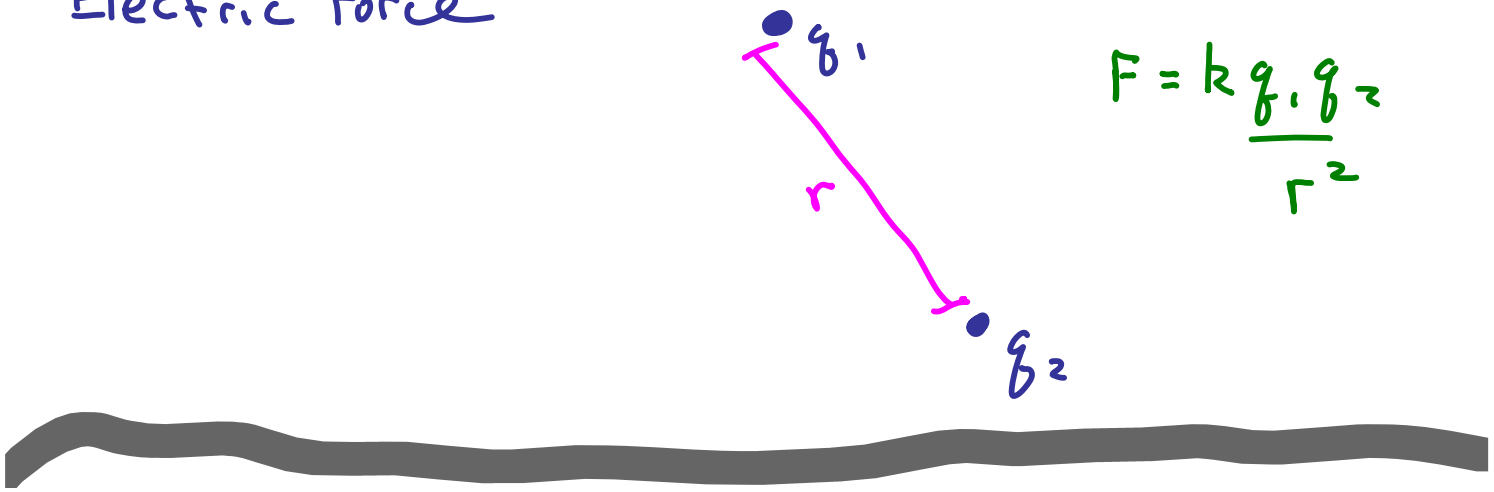
Rush Rhees 3rd Floor B+L



Last Time

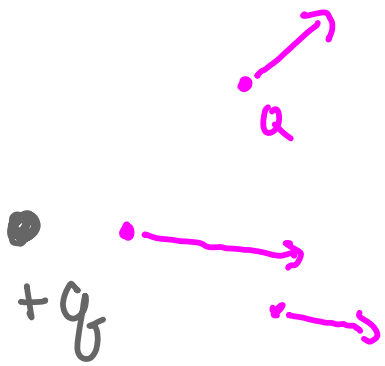
Electric Fields

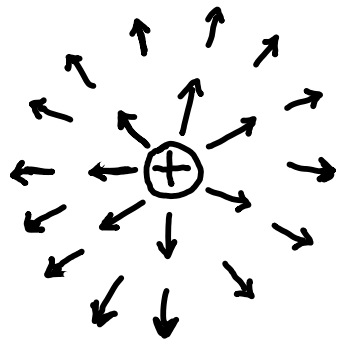
Electric Force



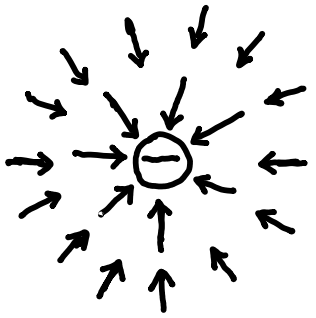
$$F = k\frac{q_1 q_2}{r^2}$$

Electric Field = Force/charge at a point in space

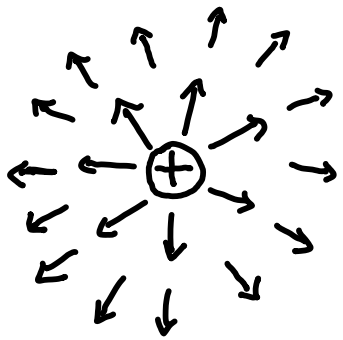




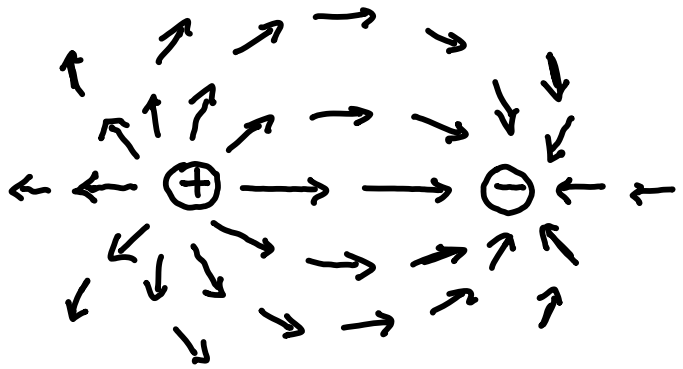
Electric field surrounding a positively charged particle



Electric field surrounding a negatively charged particle

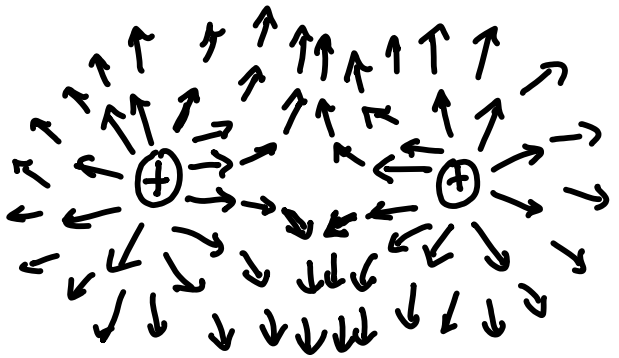


Electric field around one charged particle



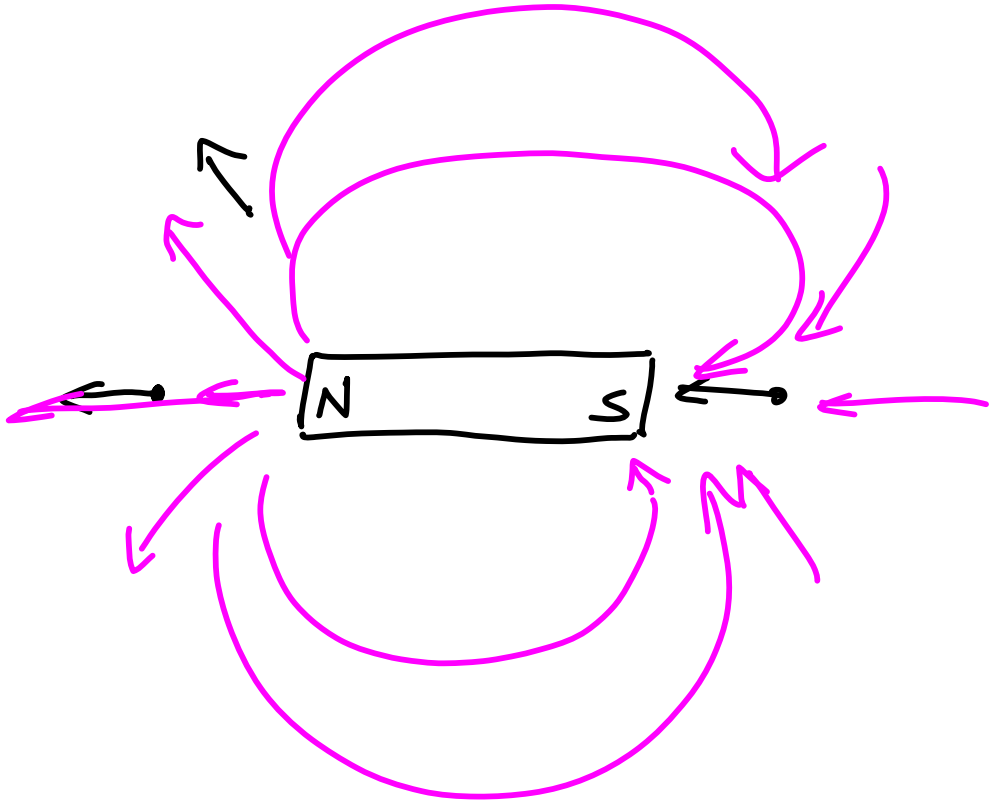
Electric field around two charges of opposite sign

Electric field around two charges of the same sign

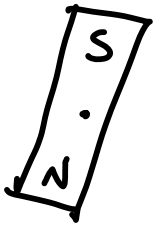


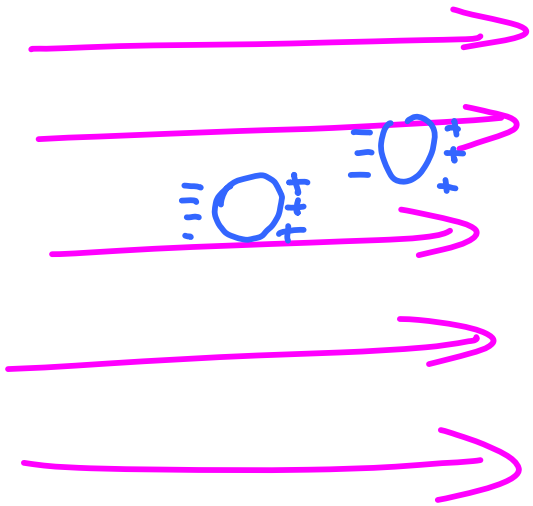
Check out the electric field java applet at:

http://web.pas.rochester.edu/~manly/class/P142_2010/Lectures/EField/index.html



You can visualize/use magnetic fields, too.

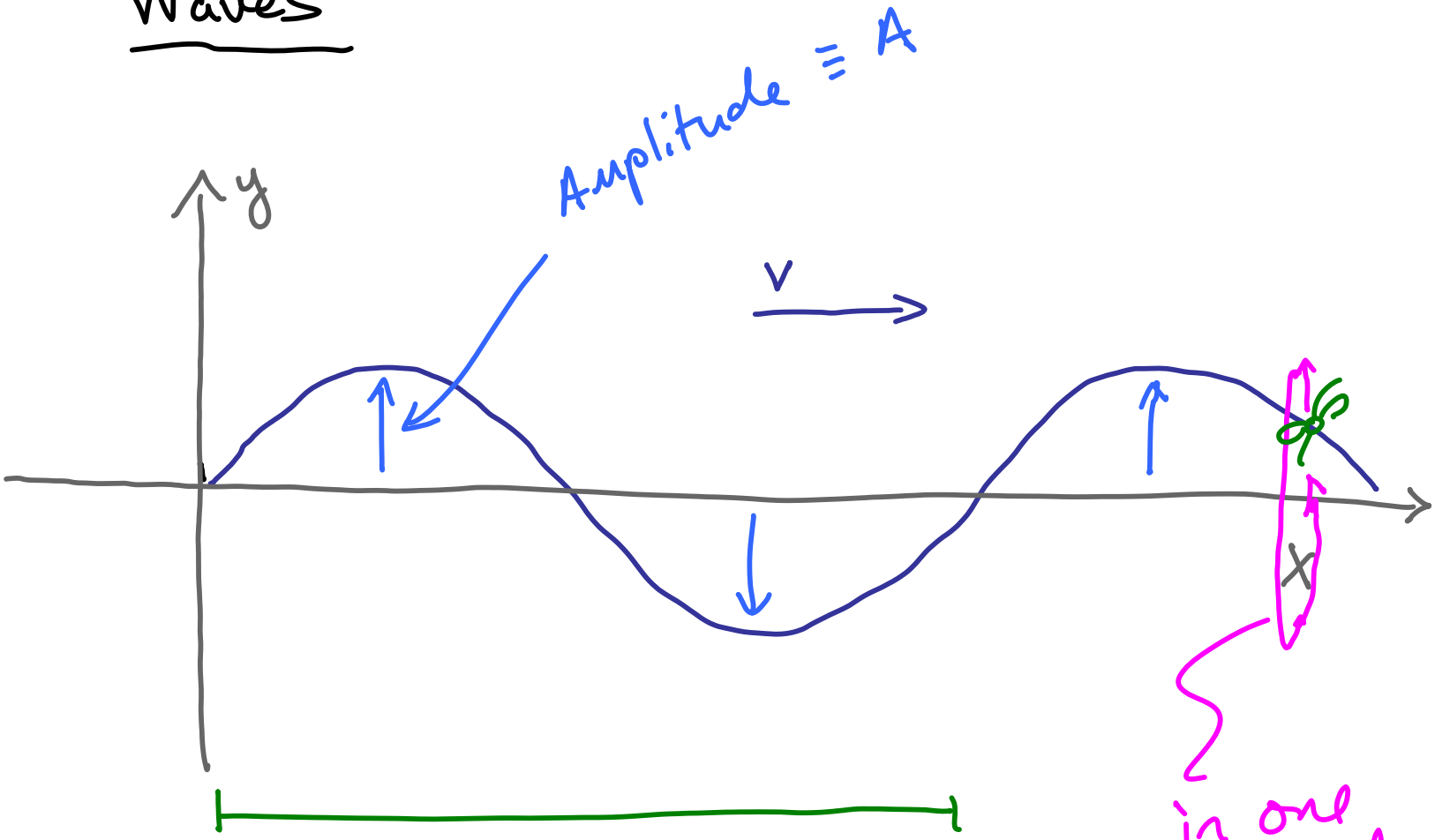




$\vec{E}$

In the demo we did in class, beads with no net electric charge have a charge separation induced by the external electric field and are attracted to each other.

Waves



$$\text{Frequency} = \frac{1}{T} = \nu = f$$

ν: for light; f: sound

$$v = \lambda \nu$$

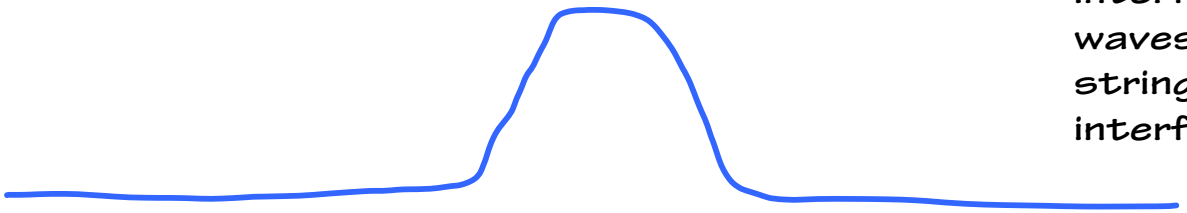
$$m/s = m \frac{1}{s}$$

Waves exhibit

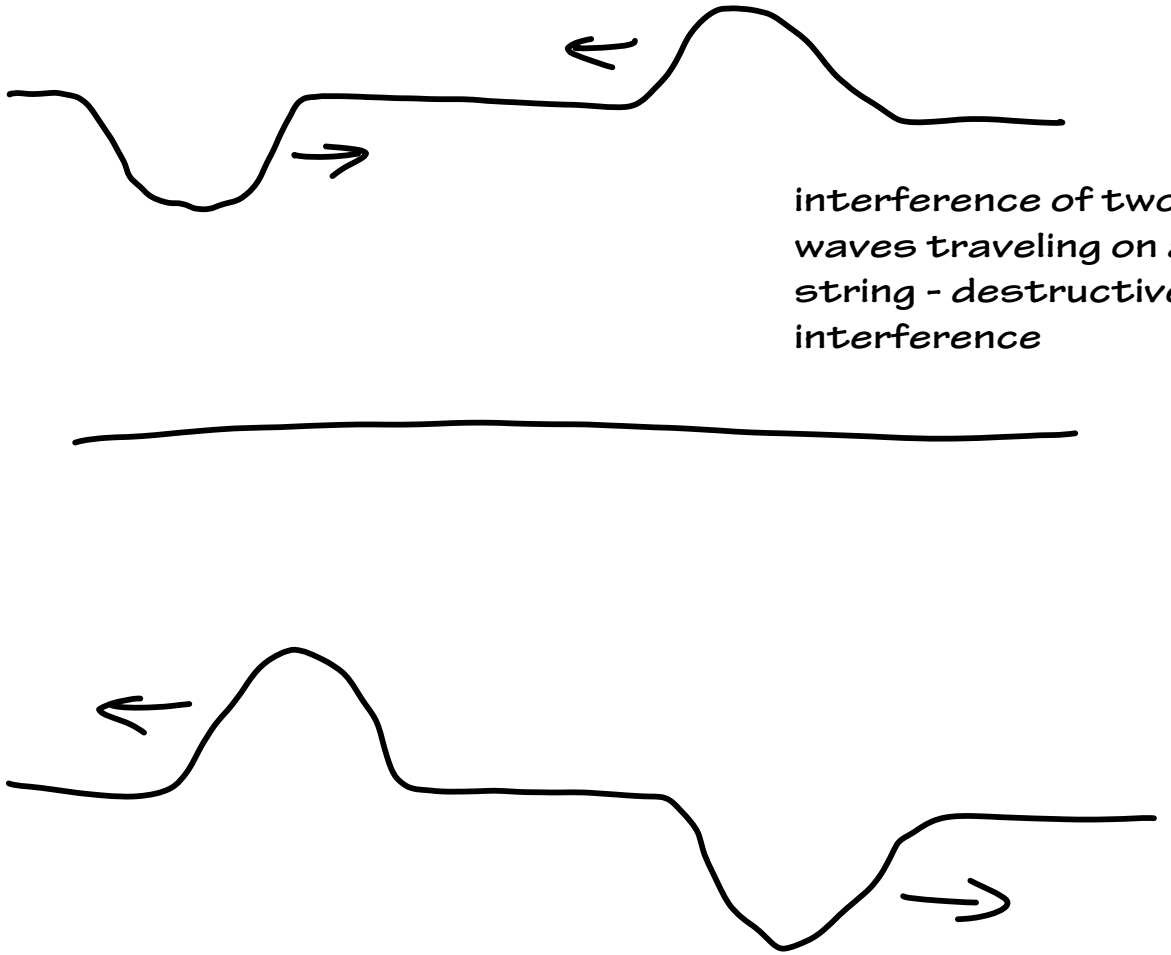
Interference — wave amplitudes add together

Diffraction — waves spread out when going thru small openings

Refraction — wave bend at a surface



interference of two waves traveling on a string - constructive interference



interference of two waves traveling on a string - destructive interference