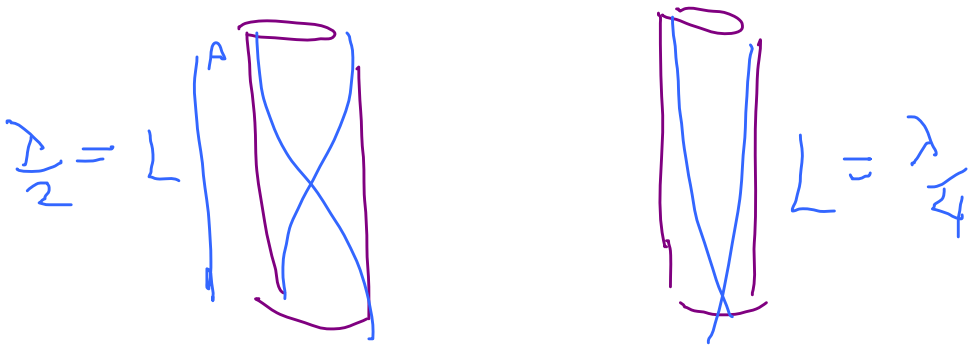
Phys 2110-4 12/9/11

Note Title 12/9/2011

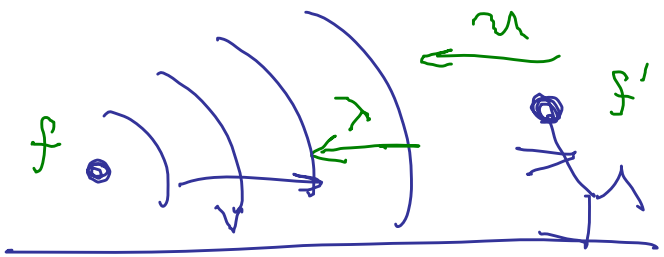
$$\lambda f = v$$

Doppler Effect

$$f' = f \frac{\left(1 \pm \frac{v_o}{v}\right)}{\left(1 \mp \frac{v_s}{v}\right)}$$



Moving obs



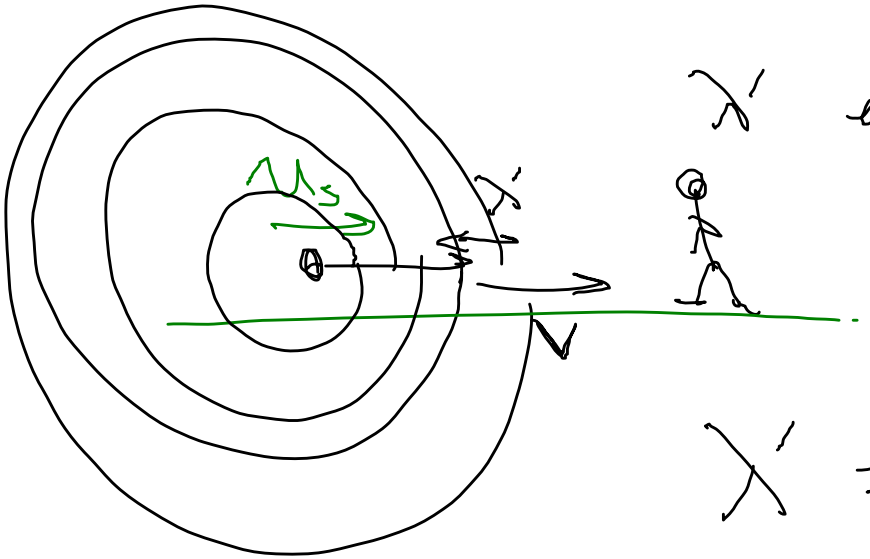
Great effective speed of waves:

$$v' = v + u_o$$

$$f' = \frac{v'}{\lambda} = \frac{(v + u_o)}{v/f}$$

$\lambda f = v$

$$= f\,\frac{(v+u_o)}{v} = f\left(1 + \frac{u_o}{v}\right)$$ ✓



λ' eff. wavelength, shorter f' bigger

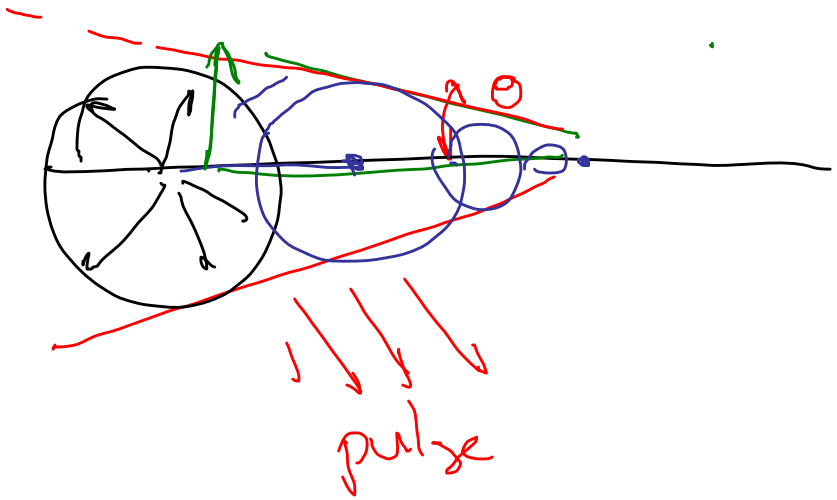
$$\lambda' \approx \lambda - v_s T \qquad \lambda f = v$$

Small panel

$$f' = \frac{v}{\lambda'} = \frac{\lambda f}{\lambda - v_s T}$$

$$= f\left(\frac{1}{1 - v_s T/\lambda}\right) \qquad \frac{T}{\lambda} = \frac{1}{f\lambda} = \frac{1}{v}$$

$$= f\left(\frac{1}{1 - v_s/v}\right) \checkmark$$



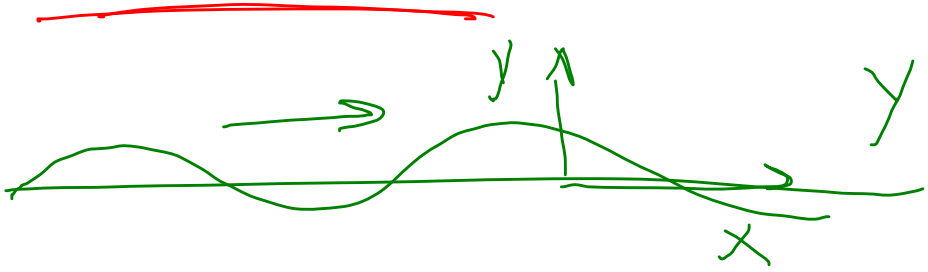
Supersonic motion.

u , v

$\sin\theta = \frac{v}{u}$

Shock wave

p.241



$y(x,t) = A\cos(kx \mp \omega t + \phi)$

$k = \frac{2\pi}{\lambda}$ $\omega = \frac{2\pi}{T}$ ...