

Average wave energy per wavelength, per period

$$\bar{E} = \frac{1}{2} \rho g a^2$$

Energy propagates at group velocity

$$V_g = \frac{d\omega}{dk}$$

$$= \frac{1}{2} \frac{\omega}{k} \left\{ 1 + \frac{kH}{\sinh(kH) \cosh(kH)} \right\}$$

In deep water $V_g = \frac{1}{2} \frac{\omega}{k}$

Phase velocity $c = \frac{\omega}{k}$