

# Waves Carry Energy

Total Energy Density

$$u = \epsilon_0 E^2$$

Intensity

$$I = \frac{1}{2} c \epsilon_0 E_0^2 = c \langle u \rangle$$

Average Energy Density

$$\langle u \rangle = \frac{1}{2} \epsilon_0 E_0^2$$

Poynting Vector

$$\vec{S} \equiv \frac{\vec{E} \times \vec{B}}{\mu_0} \quad \langle S \rangle = I$$

