Radiometry

Radiometry

- Light Frequency

$$f = \frac{c_n}{\lambda},$$

Light speed

wavelength

- Energy of a photon

$$q = \frac{hc}{\lambda}$$

- h is the Planck's constant

Radiometry

- Spectral Energy

$$\Delta Q = \frac{\Delta q}{\Delta \lambda}$$

- Irradiance: the spectral power per unit area

$$H = \frac{\Delta q}{\Delta A \Delta t \Delta \lambda}$$

finite area of the sensor measuring

Radiometry

- Radiance: irradiance per unit direction

$$R = \frac{\Delta H}{\Delta \sigma} = \frac{\Delta q}{\Delta A \Delta t \Delta \lambda \Delta \sigma}$$

Radiance

- Field Radiance: radiance incident from a point on the surface

$$L_s = \frac{\Delta E}{\Delta \sigma cos\theta}$$

- Surface Radiance: radiance exiting from a point of the surface

$$L_f = \frac{\Delta H}{\Delta \sigma cos\theta}$$

Bidirectional Reflectance Distribution Function

- Objects look different when
  - viewed from different directions
  - illuminated from different directions.

- BRDF at a surface point P

$$\rho(k_i, k_o) = \frac{L_s}{H}.$$