Radiometry Terminology for Light

Term	Definition	Units	Application
Radiance	the quantity of energy travelling at some point in a specified direction, per unit time, per unit area *perpendicular to the direction of travel*, per unit solid angle.	wm^2sr^{-1}	representing light travelling in free space; representing light reflected from a surface when the amount reflected depends strongly on direction
Irradiance	total incident power per unit surface area	wm^{-2}	representing light arriving at a surface
Radiosity	the total power leaving a point on a surface per unit area on the surface	wm^{-2}	representing light leaving a diffuse surface

Radiometry Property of Surfaces

Term	Definition	Units	Application
BRDF (Bidirectional Reflectance Distribution Function)	the ratio of the radiance in the outgoing direction to the incident irradiance	sr^{-1}	representing reflection off general surfaces where reflection depends strongly on direction
Directional Hemispheric Reflectance	the fraction of the incident irradiance in a given direction that is reflected by the surface, whatever the direction of reflection	unitless	representing reflection off a surface where direction is unimportant
Albedo	Directional hemispheric reflectance of a diffuse surface	unitless	representing a diffuse surface

Important types of surfaces

Term	Definition	Examples
Diffuse surface; Lambertian surface	A surface whose BRDF is constant	Cotton cloth; many rough surfaces; many paints and papers; surfaces whose apparent brightness doesn't change with viewing direction
Specular surface	A surface that behaves like a mirror	Mirrors; polished metal
Specularity	Small bright patches on a surface that result from specular components of the BRDF	