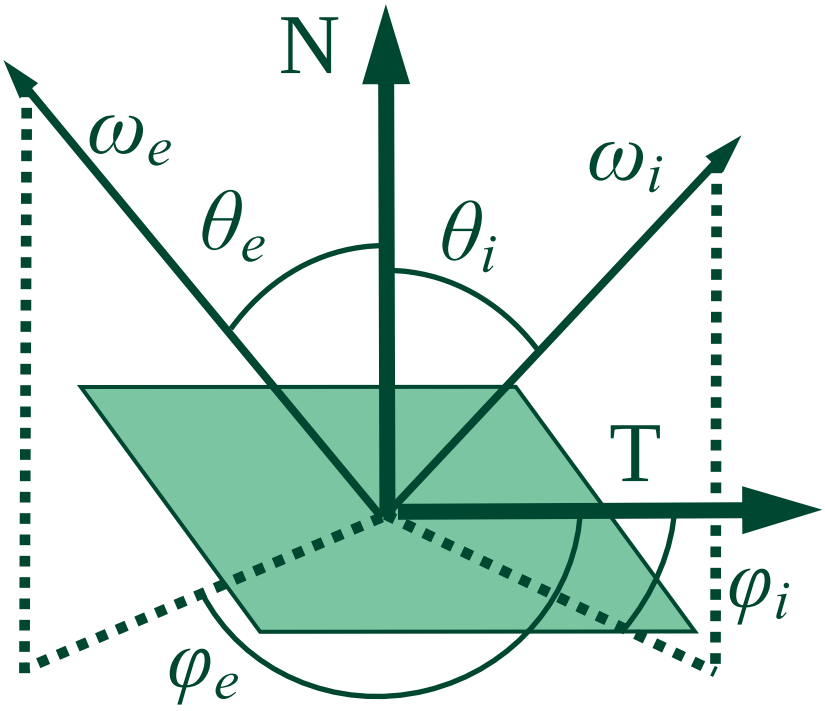
Glossary for Course #17: Physically-Based Reflectance for Games

Φ	radiant flux: total light power (Watts)
B	radiant exitance (radiosity): power/area density exitant from a surface (Watts/meter^2)
E	irradiance: power/area density incident on a surface (Watts/meter^2)
I	radiant intensity: directional power/solid angle density (Watts/steradian)
L	radiance: power/projected area/solid angle density in a ray (Watts/meter^2·steradian)
ω_i	incident direction (unit vector) direction to light, is actually pointing outwards
ω_e	exitant direction (unit vector) direction to eye
$L_i(\omega_i)$	incident radiance: radiance incoming to a point on a surface from a given direction
$L_e(\omega_e)$	exitant radiance: radiance outgoing from a point on a surface into a given direction
$\mathbf{N}$	surface normal (unit vector)
$\mathbf{T}$	surface tangent (unit vector)
$\mathbf{B}$	surface bitangent (unit vector)
Ω	hemisphere around the surface normal
θ_i	incidence angle: elevation angle of ω_i (radians)
φ_i	azimuth angle of ω_i (radians)
θ_e	elevation angle of ω_e (radians)
φ_e	azimuth angle of ω_e (radians)
$\cos\theta$	clamped cosine factor (is 0 where cosine is negative) (unit-less)
$f_r(\omega_i,\omega_e)$	BRDF: ratio of differential exitant radiance and differential irradiance
$R(\omega_i)$	directional-hemispherical reflectance: ratio of diff. radiant exitance and diff. irradiance (unit-less)
ρ	bihemispherical reflectance (albedo): ratio of radiant exitance and irradiance (unit-less)
ω_l	direction to a point / directional light (unit vector)
θ_l	elevation angle of ω_l (radians)
$R_F(0)$	directional-hemispherical Fresnel reflectance at normal incidence (unit-less)
$p(\omega)$	NDF: normal distribution function – density of normals pointing in a particular direction
ω_h	half-angle direction (unit vector) direction halfway between light and eye
θ_h	elevation angle of ω_h (radians)
φ_h	azimuth angle of ω_h (radians)
α_h	angle between ω_i and ω_h, or between ω_e and ω_h (radians)
α_u	angle between $\mathbf{T}$ and ω_h (radians)
α_v	angle between $\mathbf{B}$ and ω_h (radians)
$G(\omega_i,\omega_e)$	geometry factor: fraction of microfacets which are not masked or shadowed
K_p	geometry constant: constant dependent on microgeometry structure
ω_{ri}	reflection of incident direction about the surface normal (unit vector)
ω_{re}	reflection of exitant direction about the surface normal (unit vector)
α_r	angle between ω_{ri} and ω_e, or between ω_{re} and ω_i (radians)
i_l	"game intensity" of light (is equal to I_l/π) (Watts/steradian, but note π factor)
d_l	distance from point light to surface point (meters)
$f_d(d_l)$	distance attenuation factor as a function of distance from light (unit-less)
$i_l(d_l)$	"game intensity" of light after attenuation by distance (Watts/steradian, but note factors)
ρ_d	diffuse or body bihemispherical reflectance (albedo) (unit-less)


N
ω_e
θ_e
θ_i
ω_i
T
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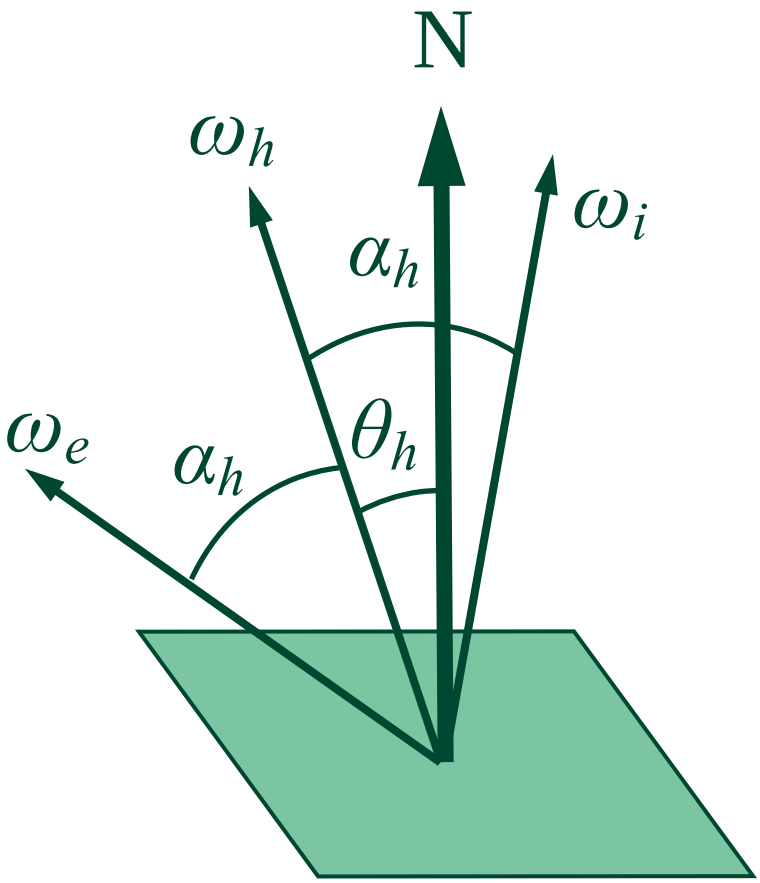
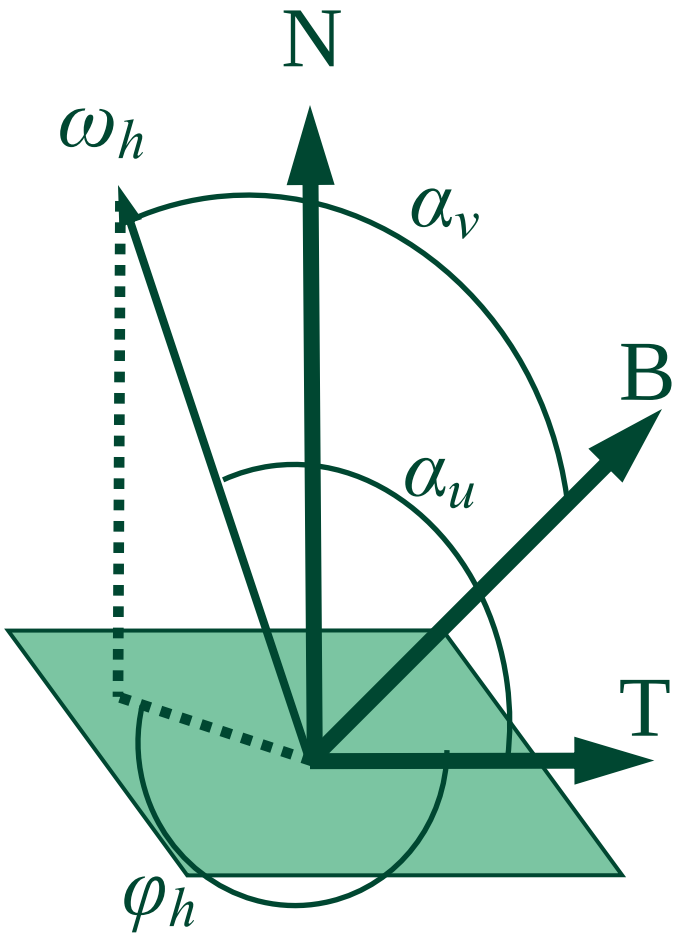

N
ω_h
ω_i
α_h
ω_e
α_h
θ_h


N
ω_h
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B
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