

Smartphone Spectrophotometer Notes

Shehtab Zaman

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5.1 Lambertian BRDF

Assuming a diffuse reflection and rotational symmetry of the secchi disk, we can assume the Lambertian BRDF to be as constant, with the form,

$$f(\theta_i, \phi_i; \theta_r, \phi_r) = \frac{\rho_d}{\pi}$$

The ρ_d is the albedo of the secchi disk.

Inside the water column with the assumption that the light source is normal to the surface, the surface radiance is then,

$$L = \frac{\rho_d}{\pi} I_0$$

Where, I_0 is the intensity of the incident light.

Note: The intensity of light in the water will lower than the intensity of light outside. (The incident light will need to take into account Fresnel Diffraction possibly?)

6 References

References

[1] jhjkjhkhjhkhj