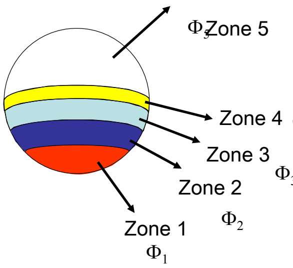
Calculating UF

Using CIE flux numbers

CIE Flux Description of Flux Distribution from Luminaire



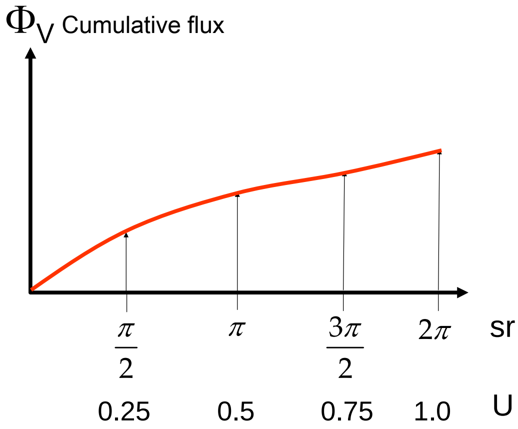
Φ_5 Zone 5, Φ_4 Zone 4, Φ_3 Zone 3, Φ_2 Zone 2, Φ_1 Zone 1

Φ_{LAMP}

$\Phi_{DOWN} = \Phi_1 + \Phi_2 + \Phi_3 + \Phi_4$

$\Phi_{UP} = \Phi_5$

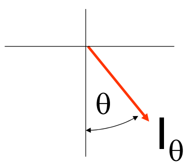
CIE numbers: $\frac{\Phi_1}{\Phi_{DOWN}}, \frac{\Phi_2}{\Phi_{DOWN}}, \frac{\Phi_3}{\Phi_{DOWN}}, \frac{\Phi_{DOWN}}{\Phi_{UP} + \Phi_{DOWN}}, \frac{\Phi_{UP} + \Phi_{DOWN}}{\Phi_{LAMP}}$

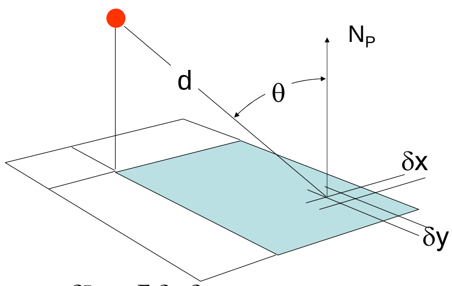


$\Phi_U = p_1 U + p_2 U^2 + p_3 U^3 + p_4 U^4$

noting that $\delta\Phi = I\,\delta\omega$

$I_\theta = I_0(const_1 + const_2 \cos\theta + const_3 \cos^2\theta + const_4 \cos^3\theta)$





$$\delta\Phi_1 = E\,\delta x\,\delta y$$

$$= \frac{const_1 \times \cos\theta}{d^2}\delta x\,\delta y$$

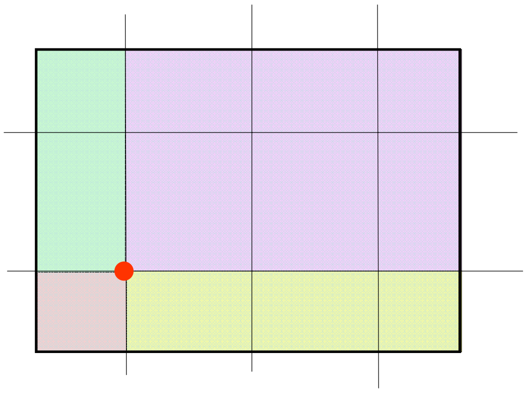
$$\Phi_1 = const_1 \int \frac{\cos\theta}{d^2} dx\,dy$$

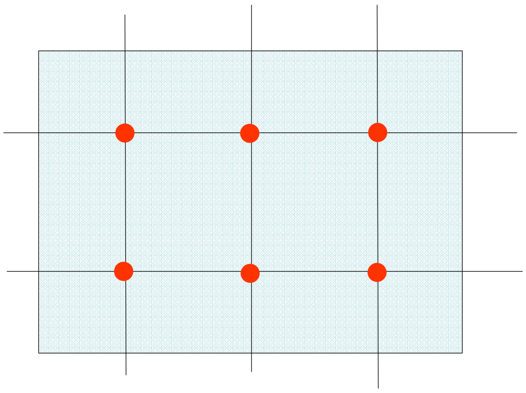
$$\Phi_1 = const_1 \int \frac{\cos\theta}{d^2} dx\,dy$$

$$\Phi_2 = const_2 \int \frac{\cos^2\theta}{d^2} dx\,dy$$

$$\Phi_3 = const_3 \int \frac{\cos^3\theta}{d^2} dx\,dy$$

$$\Phi_4 = const_4 \int \frac{\cos^4\theta}{d^2} dx\,dy$$





Direct computation