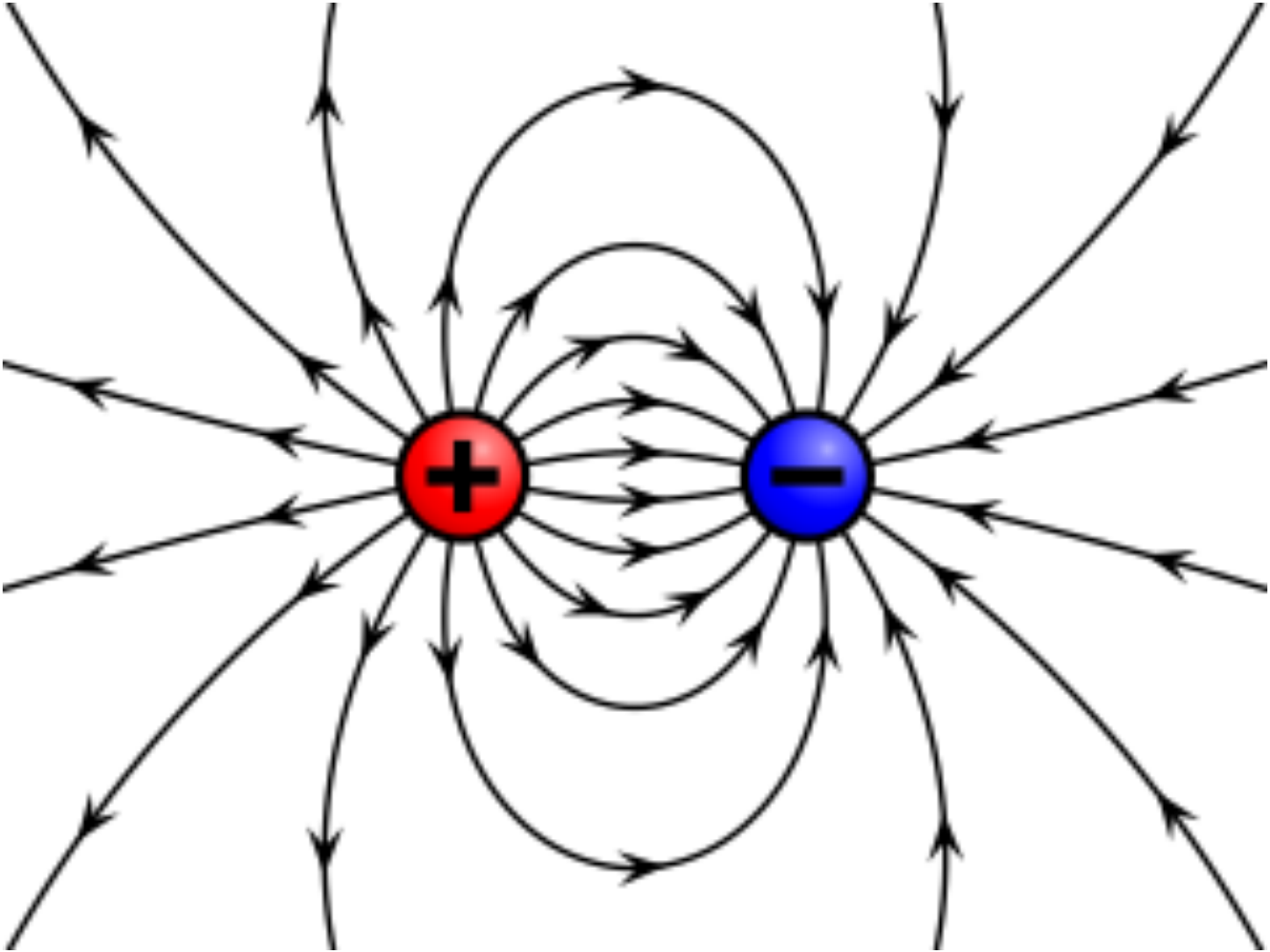
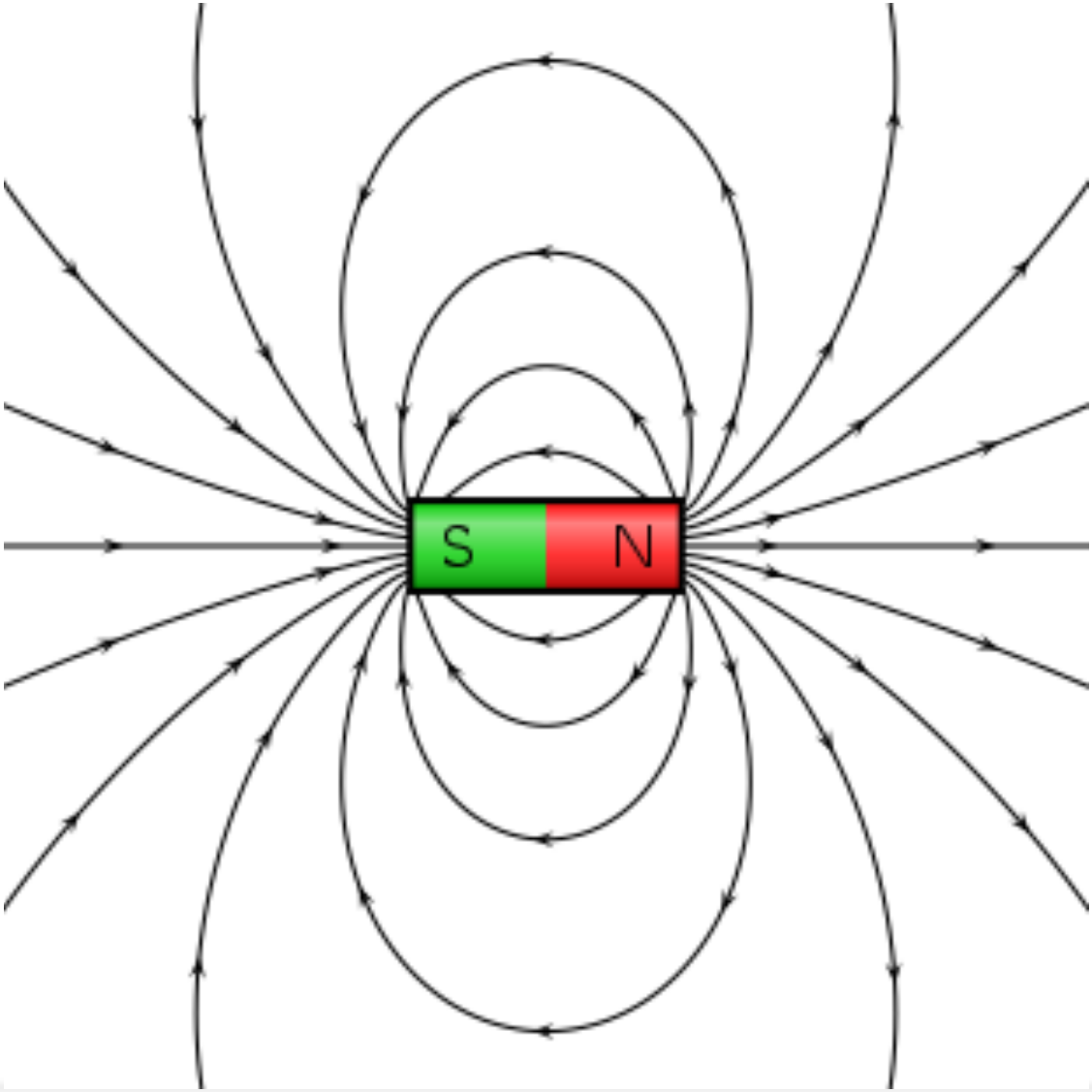


http://upload.wikimedia.org/wikipedia/commons/thumb/e/ed/VFPt_charges_plus_minus_thumb.svg



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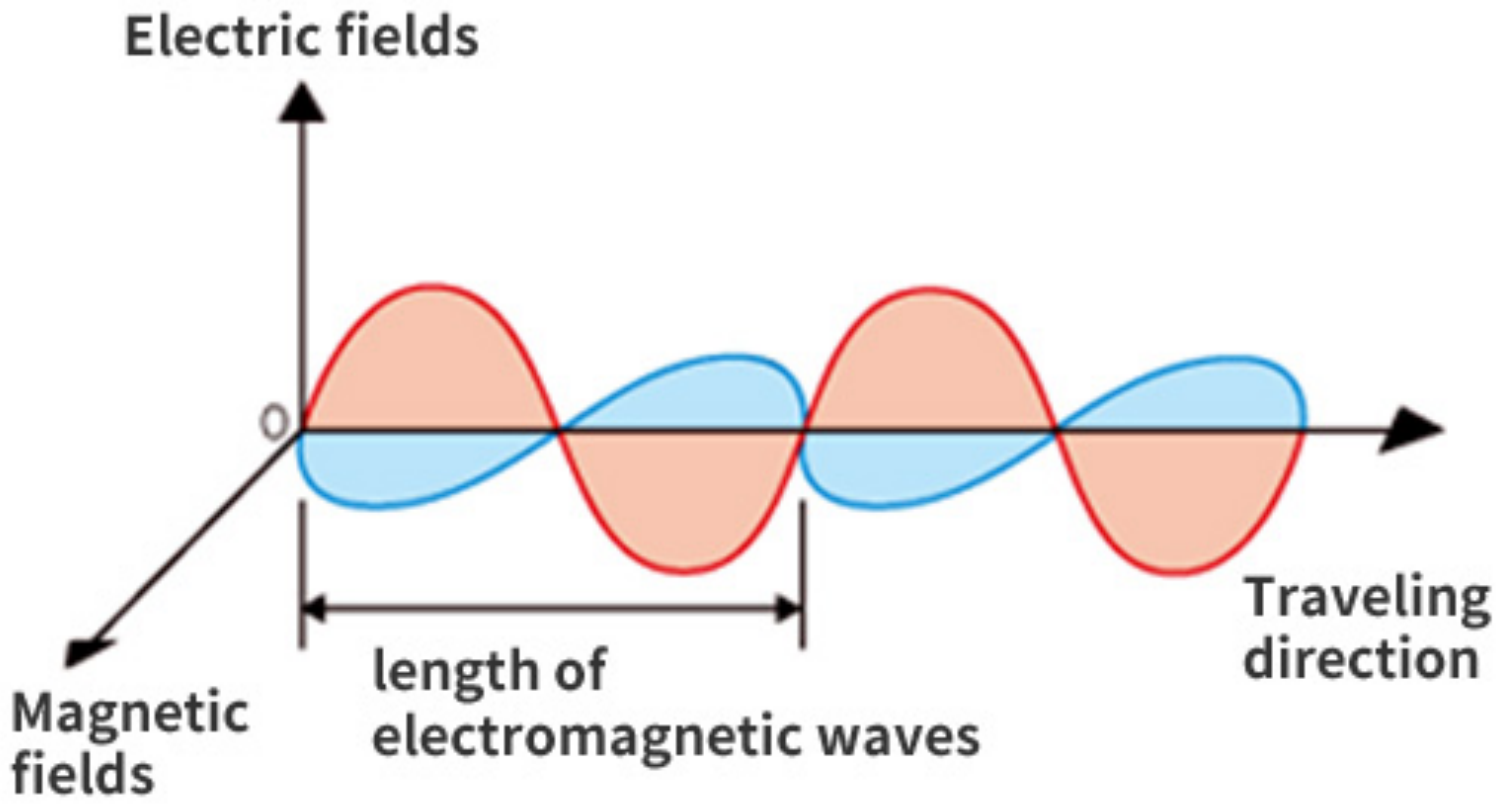
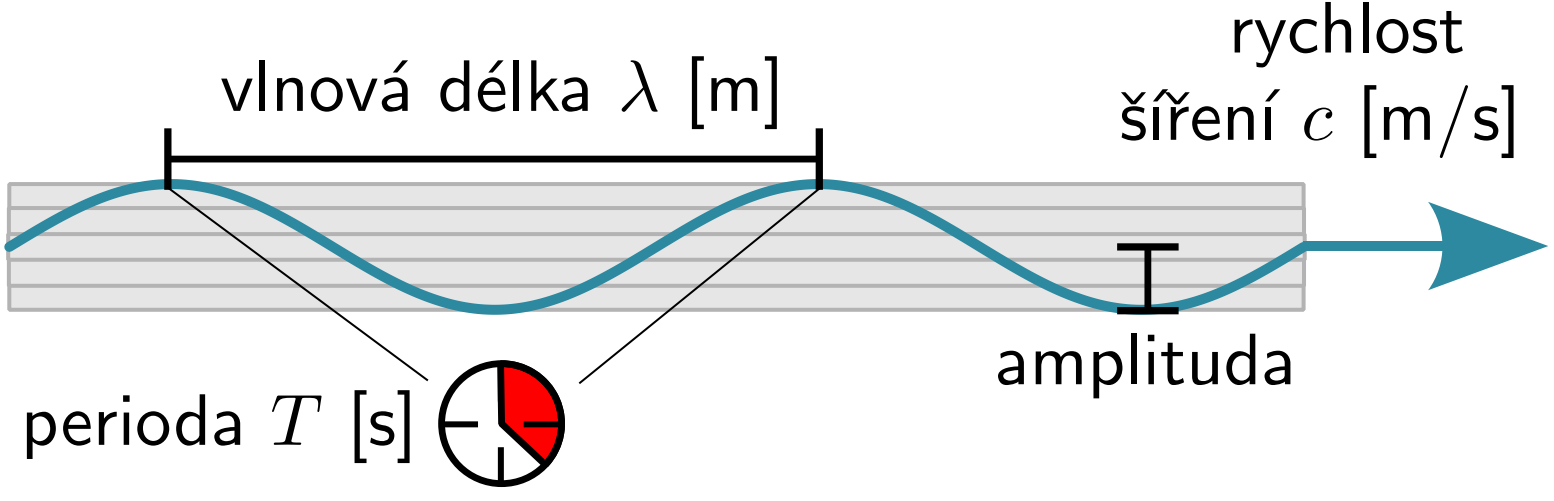
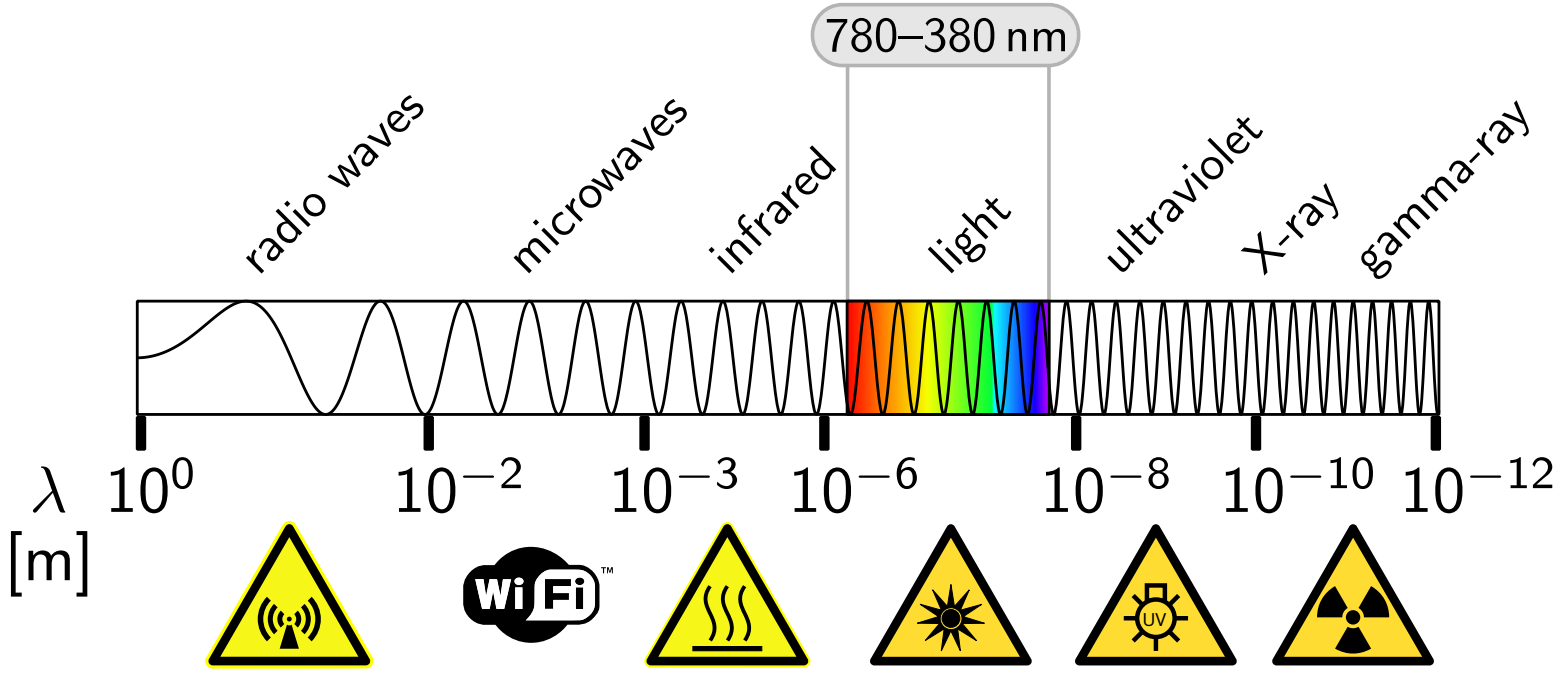
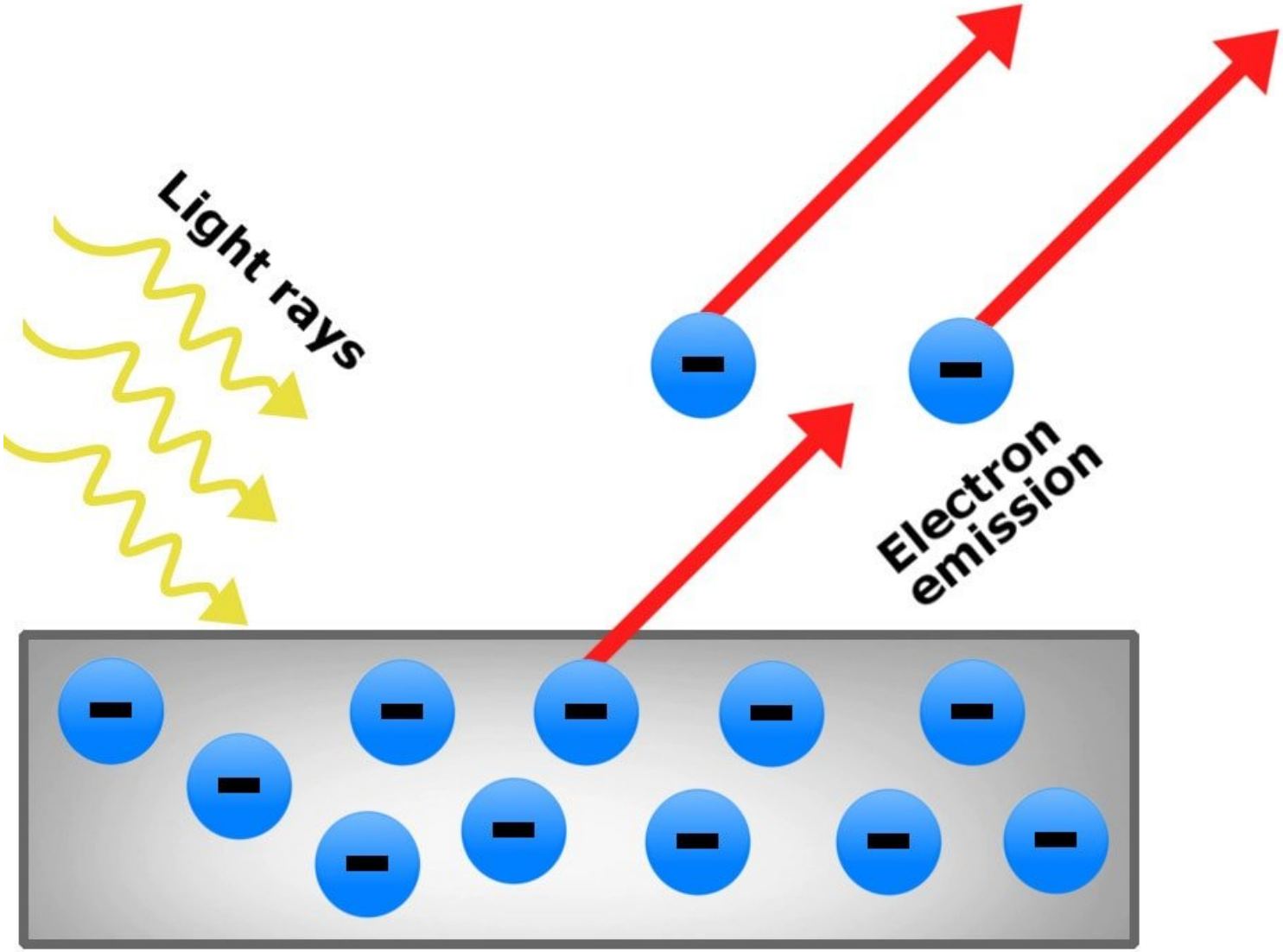


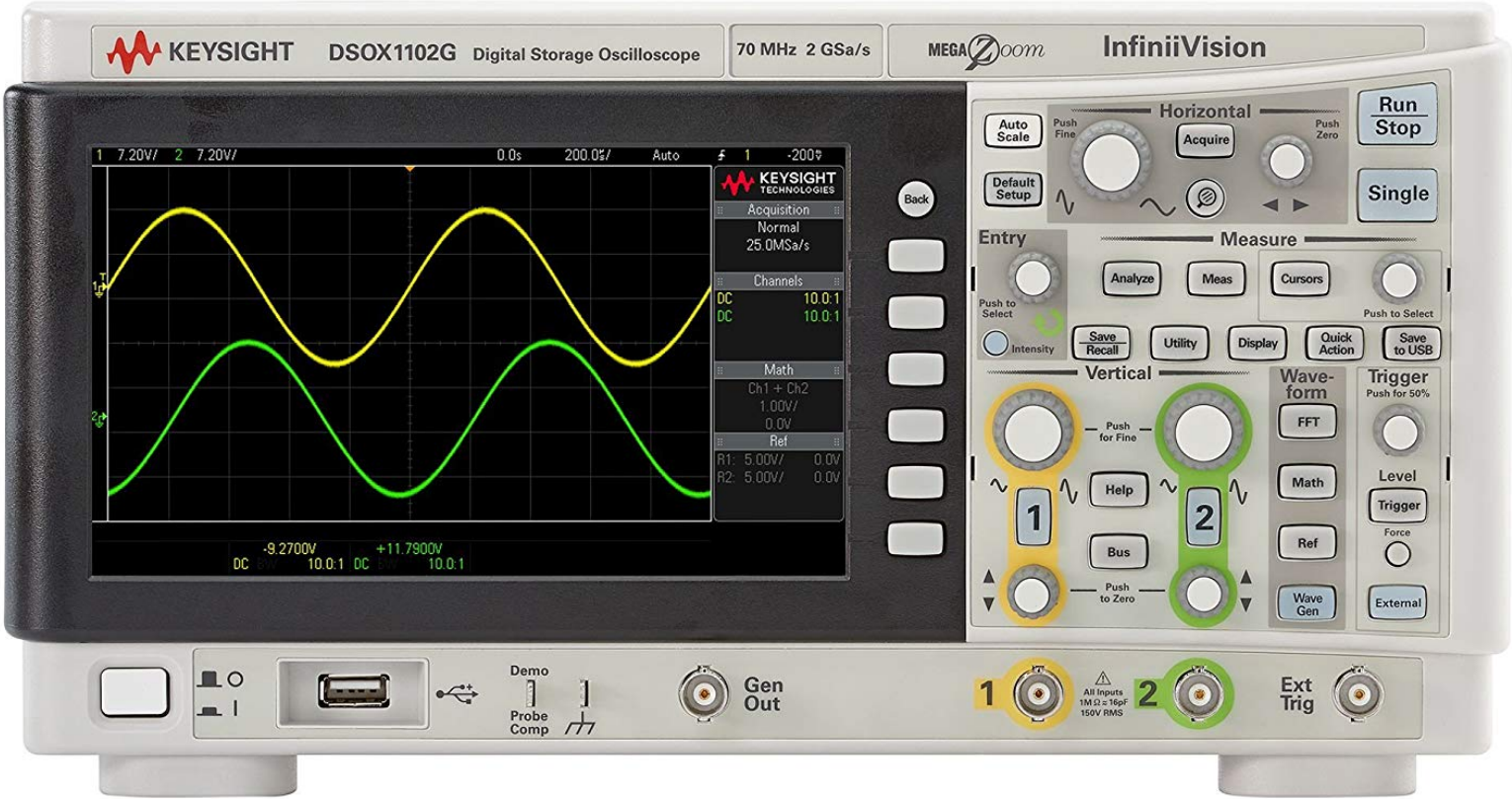
https://www.toyo-chem.com/en/products/electronics/images/img_emishield_01.jpg


vlnová délka λ [m]
rychlost
šíření c [m/s]
amplituda
perioda T [s]


780–380 nm
radio waves
microwaves
infrared
light
ultraviolet
X-ray
gamma-ray
λ [m]
10^{0}
10^{-2}
10^{-3}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Wi Fi
UV



https://www.scienceabc.com/wp-content/uploads/2017/05/Photoelectric-Effect.jpg



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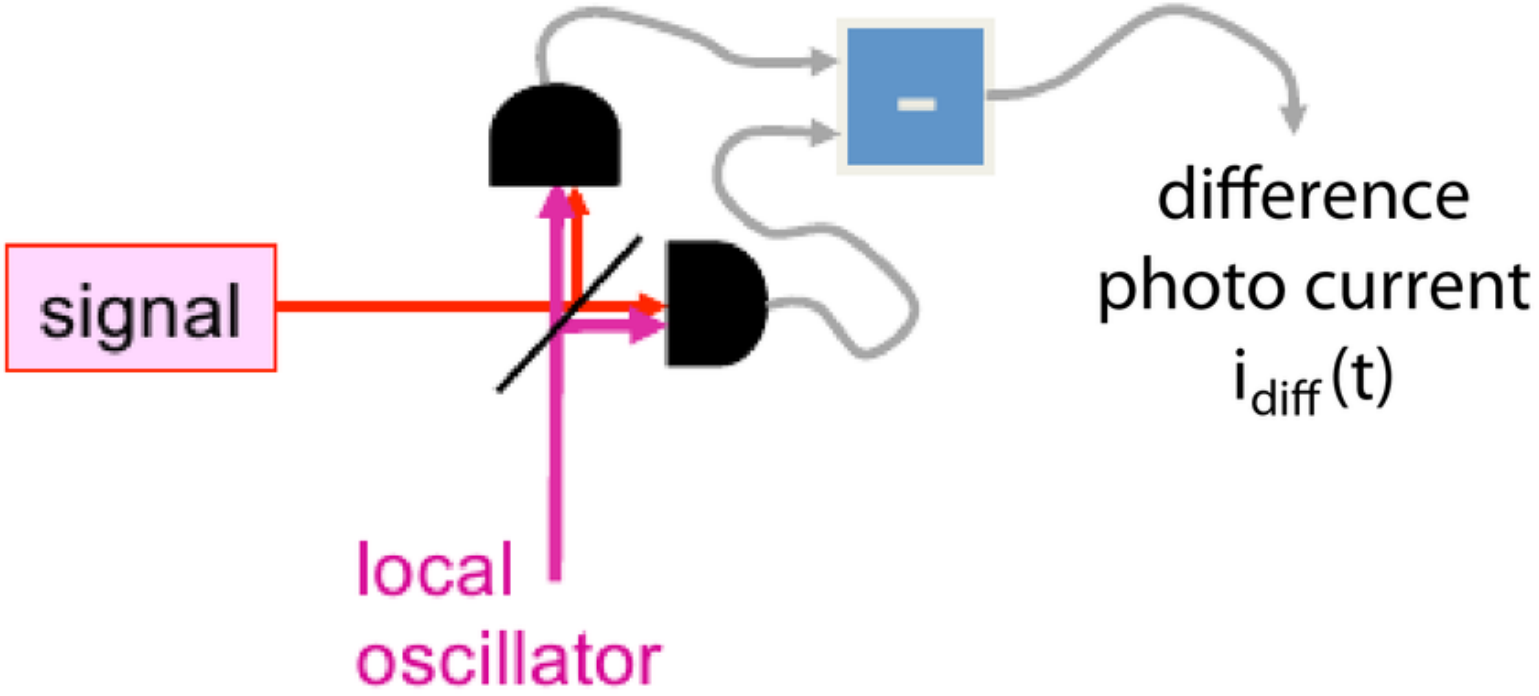


Radiometry and Photometry

1 W is 685 L
at 555 nm.

Radiometric quantities are related to photometric quantities through the CIE luminous efficiency curve

Photometric unit = K(λ) × radiometric unit
Where K(λ) = 685 V(λ)

zářivý tok

Φ, Flux

Radiant Flux
Watts
Luminous Flux
Lumens

světelný tok

intenzita vyzařování

M, Flux/Proj. Area

Radiant Exitance
Watts/m²
Luminous Flux
Lumens/m²=Lux

intenzita světlení

$\partial / \partial A$

$\partial / \partial \Omega$

E, Flux/Area Rcd.

ozářenost

Irradiance
Watts/m²
Illuminance
Lumens/m²=
Lux

osvětlení

1 Ft Candle=1L/ft²

I, Flux/Ω

zářivost

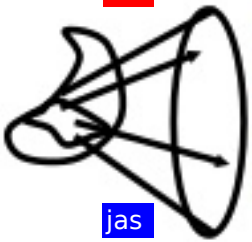
Radiant
Intensity
Watts/sr
Luminous
Intensity
Lumens/sr

svítivost

1 Candela=1cd=1L/sr

L,Flux/AΩ

zář

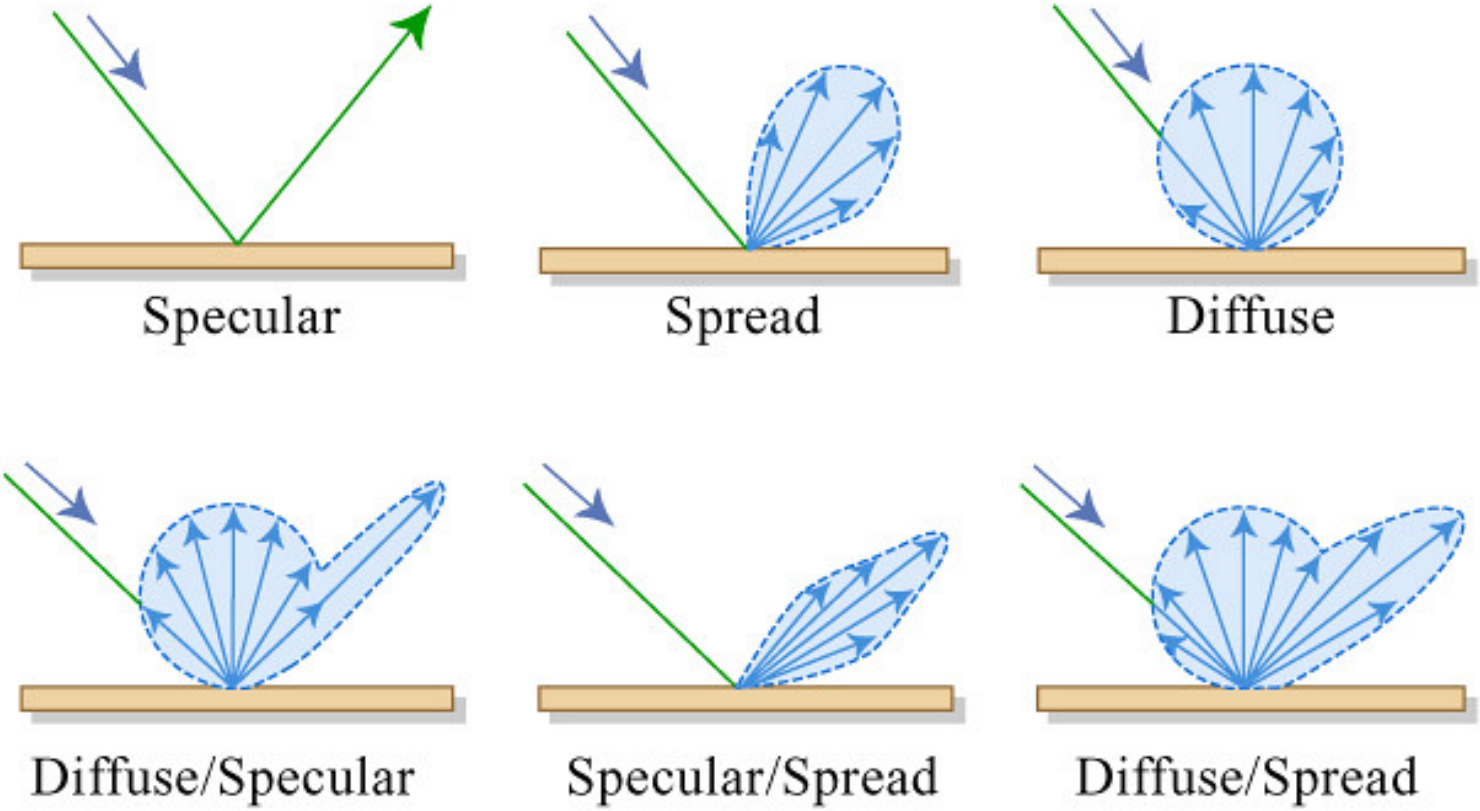


Radiance
Watts/m²/sr
Luminance
Lumens/m²/sr
1 Lambert=
(1L/cm²/sr)/π

jas

1 ft Lambert = (1L/ft²/sr)/π
1m Lambert = (1L/m²/sr)/π

https://image.slidesharecdn.com/chapter1radiometryandphotometry-140828061254-phpapp02/95/



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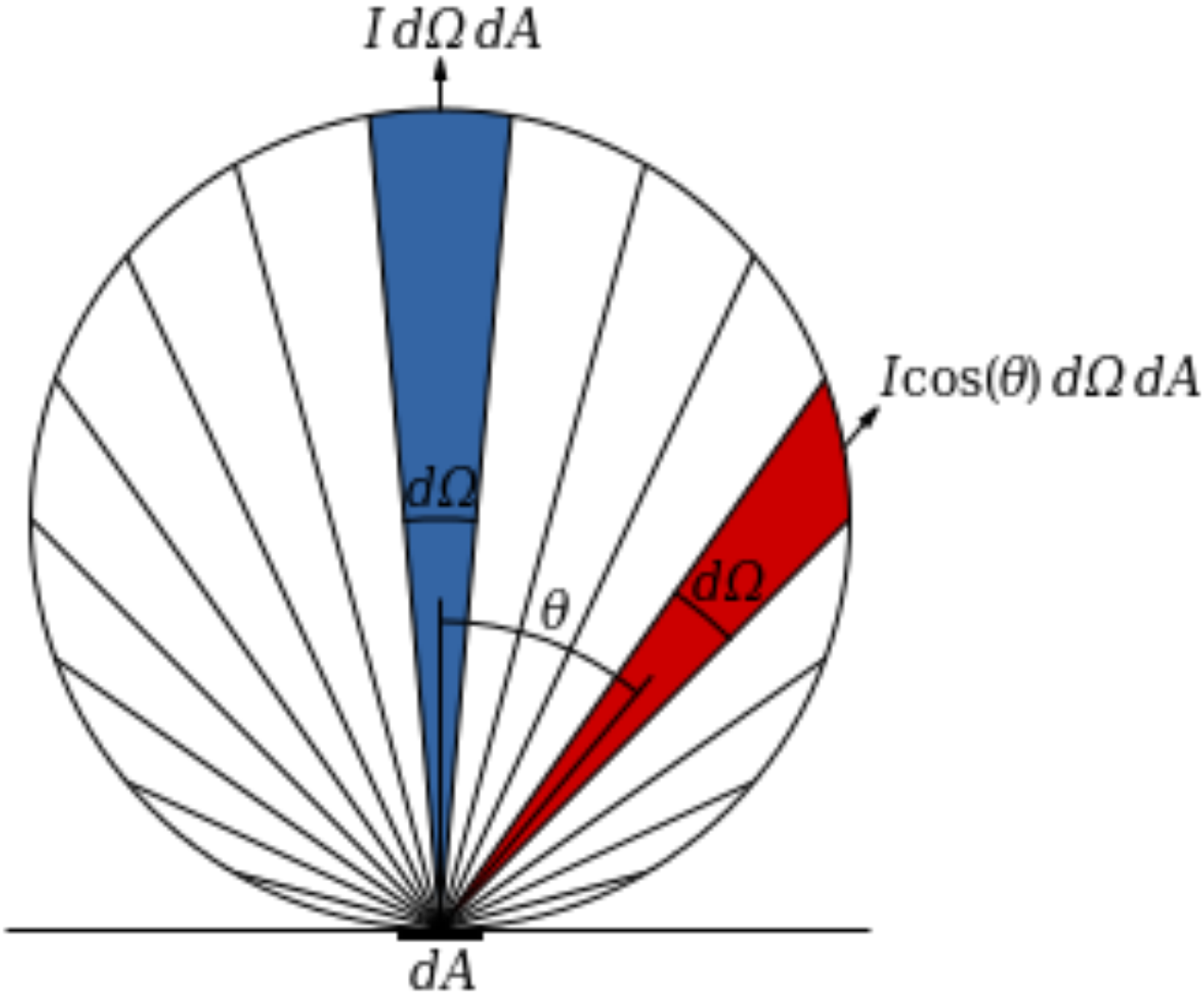
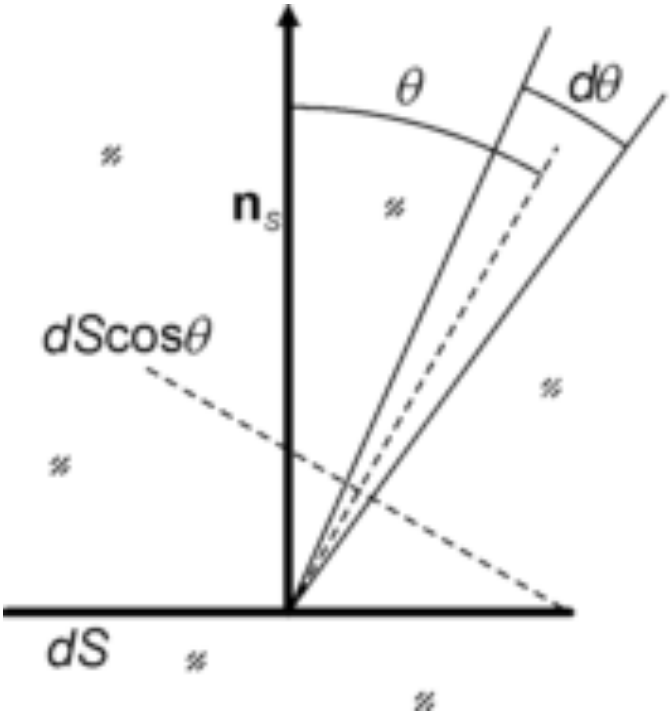
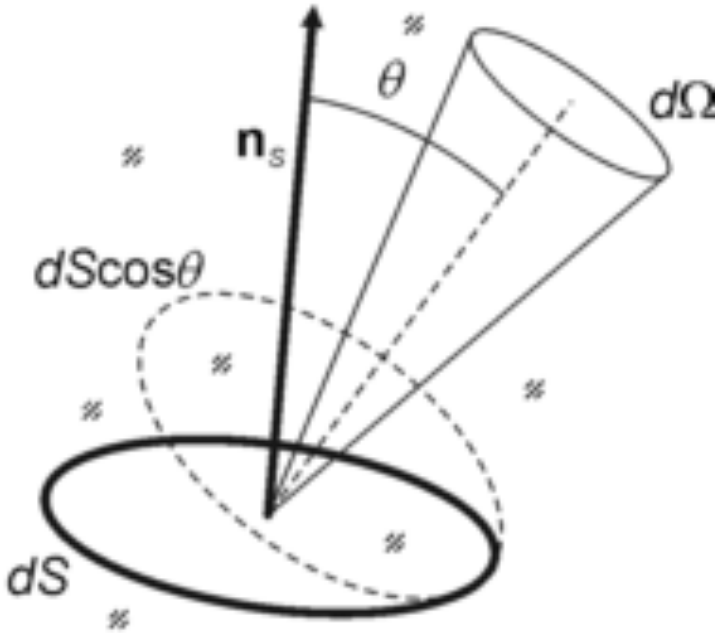


https://upload.wikimedia.org/wikipedia/commons/thumb/2/25/Lambert_Cosine_Law_1.svg



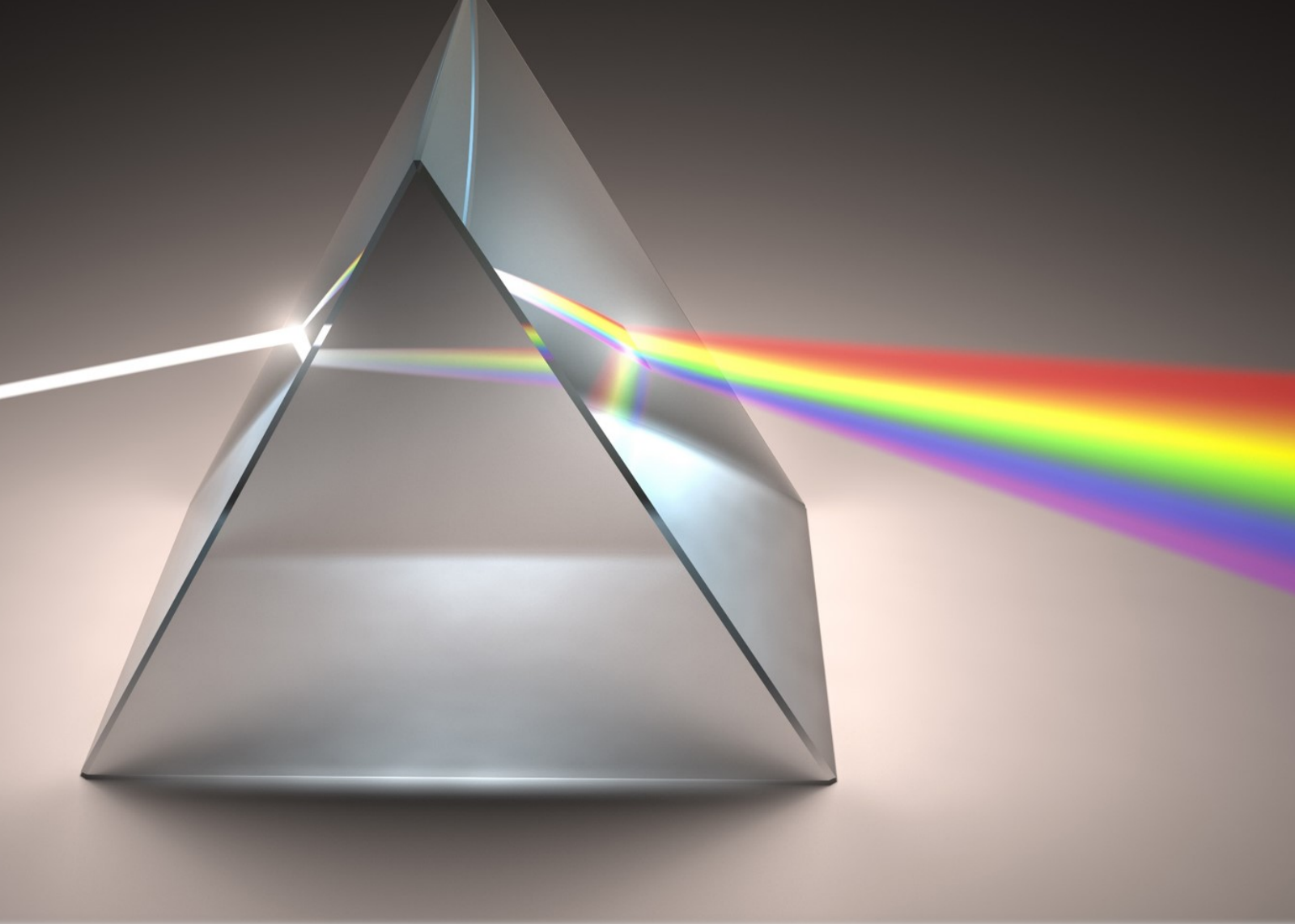


Lambert

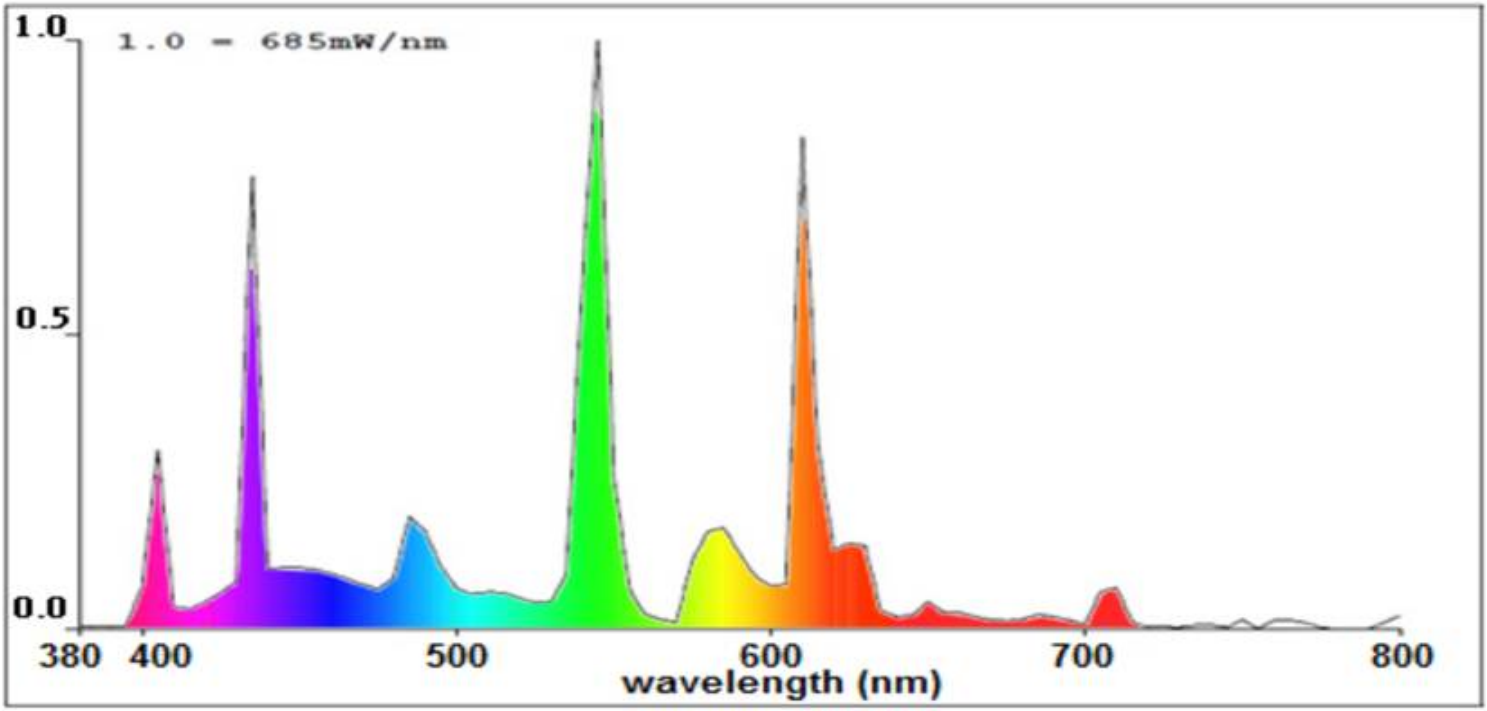
$$L = \frac{\mathrm{d}^2\Phi}{\mathrm{d}\Omega \mathrm{d}S^{\perp}} = \frac{\mathrm{d}^2\Phi}{\mathrm{d}\Omega \mathrm{d}S\cos\theta} = \frac{I\,\mathrm{d}\Omega \mathrm{d}S\cos\theta}{\mathrm{d}\Omega \mathrm{d}S\cos\theta} = \text{const.}$$

wikimedia.org/wikipedia/commons/thumb/9/99/Etendue_for_differential_surface_element_in_2D_and_3D.png

https://cnet4.cbsistatic.com/img/4_Bpx4nGoy4irQBvI2vaIk_WDVk=/2013/04/30/



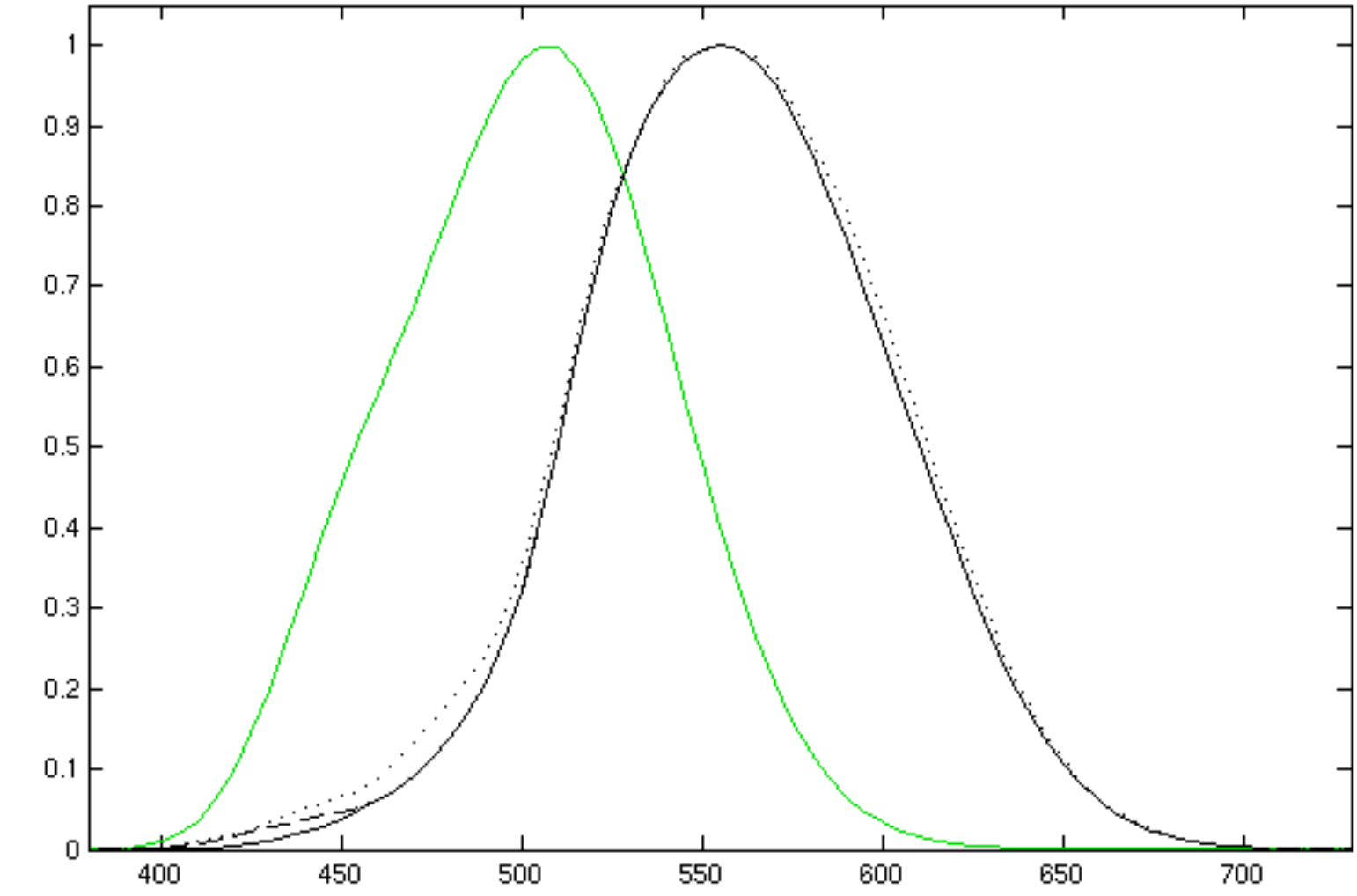
http://rivel.com/wp-content/uploads/2016/09/Prism-on-Exec-Comp-Cover-Page.jpg



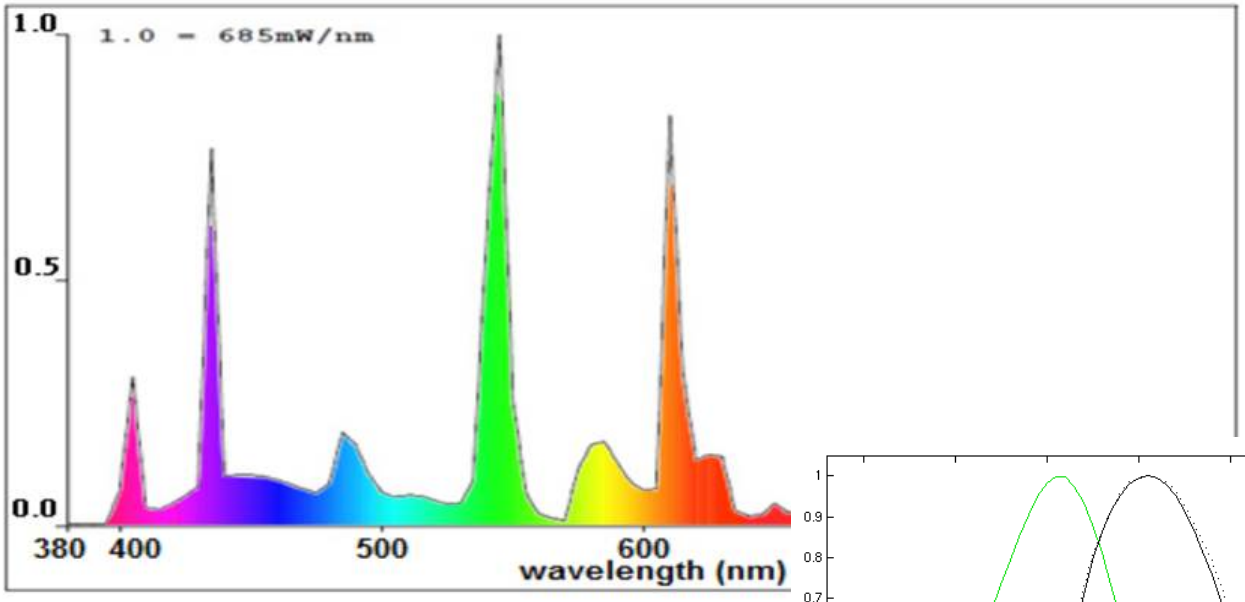
P ... výkon [W]

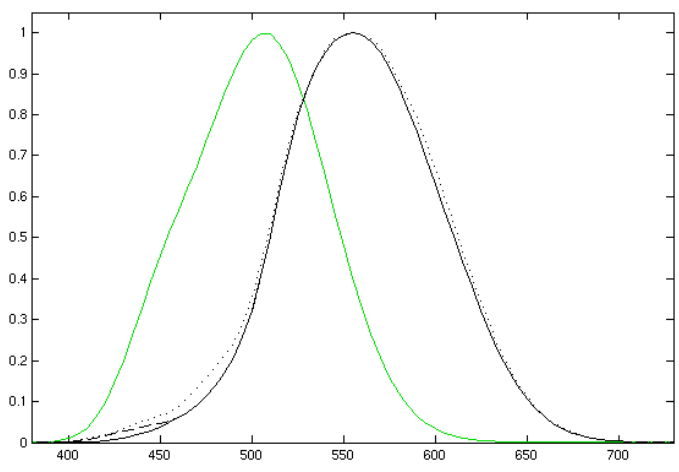
$S = \frac{dP}{d\lambda}$ ... spektrální hustota výkonu [W/nm]

$P = \int_{380}^{780} S(\lambda) d\lambda \approx \sum_{\lambda=380}^{780} S(\lambda)$



https://upload.wikimedia.org/wikipedia/commons/a/a0/Luminosity.png





$$F = \sum_{\lambda=380}^{780} S(\lambda)\eta(\lambda) \text{ [lm]}$$

Definitions, Units and Symbols

- **Radiometry** – deals with the detection and measurement of electromagnetic radiation across the total spectrum
- **Photometry** – subfield of radiometry; radiometric power scaled by the spectral response of the human eye

Radiometric			Photometric		
Quantity	Symbol	Units	Quantity	Symbol	Units
Radiant Power	Φ_e	W	Luminous Flux	Φ_v	lumens (lm)
Radiant Intensity	I_e	W/sr	Luminous Intensity	I_v	lm/sr
Irradiance	E_e	W/m^2	Illuminance	E_v	lm/m^2
Radiance	L_e	W/m^2-sr	Luminance	L_v	lm/m^2-sr

"e" = "energetic"

"v" = "visual"

OSRAM
Opto Semiconductors

https://upload.wikimedia.org/wikipedia/commons/2/27/Spermaceti_candle_and_oil.jpg