(KVXFI2BBNE, KVXFI21ONC, KVXFI6BBNE) Physics II.

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Planckt Radiation Law I

- The Planck Radiation Law can be expressed mathematically as follows:

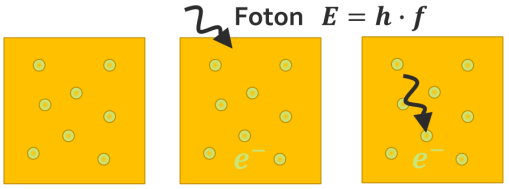
$$E(f, T) = \frac{8\pi h f^3}{c^3} \frac{1}{e^{\frac{hf}{kT}} - 1},$$

and

$$E(\lambda, T) = \frac{8\pi ch}{\lambda^5} \frac{1}{e^{\frac{hc}{\lambda kT}} - 1},$$

where c [m/s] is the speed of light in vacuum, f [1/s] is the frequency of the radiation, λ [m] is the wavelength, k is the Boltzmann constant, T [K] is the absolute temperature, and h is the Planck constant.

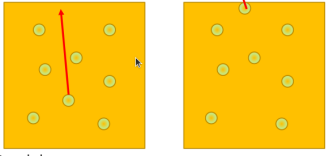
The Photoelectric Effect - Nobel P rize, Albert EINSTEIN, 1905



$E_0 = \frac{3}{2}kT$

$E' = E_0 + hf$

Az elektron elnyeli a fotont



Az elektron mozog a felület felé. Ez a mozgás ΔE energiát felemészthet.

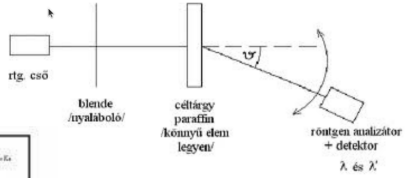
Az elektron kilép a felületen. Ez $W_{ki} = e \cdot U$ energiába kerül.

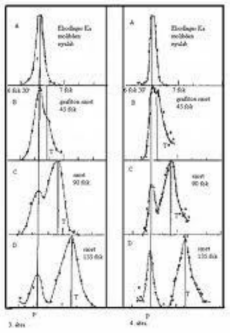
Ha $\Delta E = 0$ és $E_0 \to 0$, akkor:

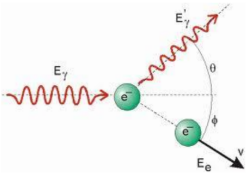
$$\frac{1}{2} m v_{max}^2 = h \cdot f - W_{ki}$$

Compton Scattering I

COMPTON-SZÓRÁS







Compton-formula:

$$\Delta\lambda = \frac{h}{m_0 c} \cdot (1 - cos\theta)$$

Compton-hullámhossz:

$$\lambda_C = \frac{h}{m_0 c}$$

Exercises I

- See other documents
- Photoelectric Effect
- Compton Scattering
- etc.

The End

Thank you for your attention!