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Tarea # 2

P. 2.1, 2.2, 2.3, 2.4, 2.7:

2.1)

Usando la eq. (2.23):

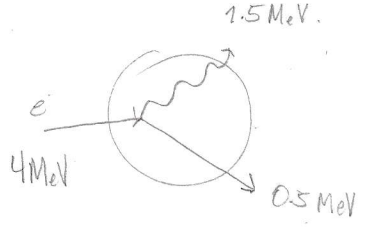
$$X = (K_c)_{air} / 33.97$$

$$\Rightarrow (K_c)_{air} = 33.97\, X$$

$$X = 47 \text{ roentgens} = 47\,(2.58E\text{-}4 \text{ C/kg})$$

$$(K_c)_{air} = 0.41192 \text{ Gy}$$

2.2)



$$\epsilon_{tr} = (R_{in})_u - (R_{out})_u^{non\,r} + \Sigma Q$$

$$\epsilon_{tr}^{n} = (R_{in})_u - (R_{out})_u^{non\,r} + \Sigma Q - R_u^{-}$$

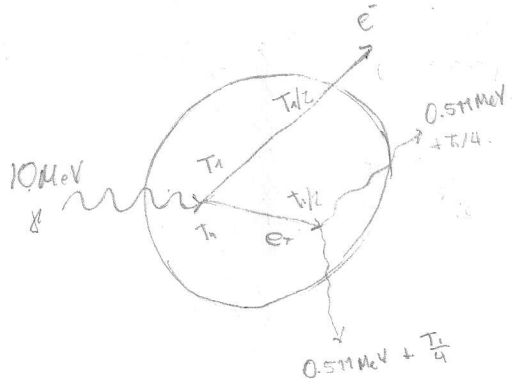
$$\epsilon = (R_{in})_u - (R_{out})_u + (R_{in})_c - (R_{out})_c + \Sigma Q.$$

a) No enta energía - radiante
$= 0$ MeV

b) $= 0$ MeV.

c) $\epsilon = (R_{in})_{u,c} - (R_{out})_{u,c} = 4 - 0.5 - 1.5$
$= 2$ MeV

2.3.)



a) $(R_{in})_u - (R_{out})_u^{normal} + \sum Q$

$10\,MeV - 2(0.511\,MeV) + \left(-2(511\,keV) + 2(511\,keV)\right)$

$= 8.978\,MeV.$

b) $\epsilon_{tr}^{n} = \epsilon_{tr} - \frac{T_1}{2}$

$2T_1 + 2(511\,keV) = 10\,MeV \Rightarrow T_1 = 4.489\,MeV.$

$\epsilon_{tr}^{n} = 8.978\,MeV - \frac{4.489}{2}\,MeV = 6.7335\,MeV$

c) $\epsilon = (R_{in})_u - (R_{out})_u + (R_{in})_c - (R_{out})_c + \sum Q^{0}$

$= 10\,MeV - \left[2(0.511\,MeV) + \frac{4.489}{2}\,MeV\right] + 0 - \left[\frac{4.489}{2}\,MeV\right]$

$= 4.99\,MeV.$

2.4) 6 MeV

$3.4E6\ /cm^2 s$

$K = 6.54\,E5\ erg/g = 6.54E3\,rad = 65.4\,Gy$

$K_c = 5.38\,E5\ erg/g = 5.38\,E3\,rad = 53.8\,Gy$

2.7)

a) La radiación es homogénea, y el kerma es indep. del volumen.

$K = 1\,Gy$

b) La energía es lineal respecto al volumen.

0.005 J y 0.025 J respectivamente.