

## Ctnt. Cosmològica $\alpha$ :

$$\text{Força} = F = \text{Newtons} = \text{Kgr} \times \text{metre}/\text{sg}^2$$

$$\text{Força Coulomb} = G \cdot q^2 / \text{metres}^2, \quad G = (\text{Kgrs} \times \text{m}^3 / \text{sg}^2) / \text{C}^2$$

$$E = \hbar \cdot \gamma = \text{Kgr} \times \text{metre}^2 / \text{sg}^2$$

$$\hbar = h / 2\pi = \text{ctnt Plank} = 6'62 \cdot 10^{-34} \text{ Kgr} \times \text{metre}^2 / \text{sg} = \text{Joules} \times \text{sg},$$

$$C = \text{Coulombs} = 1'6 \cdot 10^{-19} \text{C}, \quad c = \text{velocitat llum} = 2'99 \cdot 10^8 \text{ m/sg}$$

$$G = 1 / (4\pi\epsilon_0) = 9 \cdot 10^9 \text{ N} \times \text{metre}^2 / \text{C}^2 = h \cdot c / \text{C}^2$$

$$G = \frac{6'62 \cdot 10^{-34} \text{ Kgr} \frac{\text{m}^2}{\text{sg}} \cdot 2'99 \cdot 10^8 \text{ m/sg}}{(1'6 \cdot 10^{-19} \text{C})^2}$$

$$\text{Resulta que } C^2 / \hbar \times c = (1/G) \cdot \alpha \quad !!!$$

$$\alpha = G \times C^2 / (\hbar \times c) = \frac{(1'6 \cdot 10^{-19} \text{C})^2 \cdot 9 \cdot 10^9 \text{ kgr} \cdot \text{m}^3 / \text{sg}^2 \cdot \text{C}^2}{\frac{6'62 \cdot 10^{-34}}{2\pi} \text{ Kgrs} \cdot \frac{\text{m}^3}{\text{sg}^2 \text{C}^2}} = 7'29 \cdot 10^{-3} \quad !!!$$

$$\text{un n}^\circ \text{ sense unitats!!!} \quad \text{i } \alpha = 7'29 \cdot 10^{-3} = 1/137'1$$