

64. We use $1\text{ ly} = 9.46 \times 10^{15}\text{ m}$, and use the symbol \mathcal{V} for volume.

$$U_B = \mathcal{V}u_B = \frac{\mathcal{V}B^2}{2\mu_0} = \frac{(9.46 \times 10^{15}\text{ m})^3(1 \times 10^{-10}\text{ T})^2}{2(4\pi \times 10^{-7}\text{ H/m})} = 3 \times 10^{36}\text{ J} .$$