Heat generation rate?

$$Q = E_f N_f \sigma_f \phi$$

$\rho = 10.97$ g/cc

$\phi = 5 \times 10^{13}$ n/cm²·s

$\epsilon = 0.03$ = 3%

$m(UO_2) = 235 \times 0.03 + 238 \times 0.97 + 2 \times 16$

$= 269.9$ g/mol

$$\rho^{U\text{-}235} = 10.97 \text{ g/cc} \; \frac{1 \text{ mol}}{269.9 \text{ g}} \; \frac{6.022 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \; \frac{1 \text{ U}}{1 \text{ UO}_2} \times 0.03$$

$$\rho^{U\text{-}235} = 7.343 \times 10^{20} \text{ U}^{235}/\text{cc}$$

$$Q = \left(200 \times 10^6 \text{ eV}\right)\left(1.602 \times 10^{-19} \frac{\text{J}}{\text{eV}}\right)\left(7.343 \times 10^{20} \frac{\text{U}^{235}}{\text{cc}}\right)\left(587 \times 10^{-24} \frac{\text{cm}^2}{\text{U}^{235}}\right) \times \left(5 \times 10^{13} \frac{\text{n}}{\text{cm}^2 \cdot \text{s}}\right)$$

$$Q = 690 \frac{\text{J}}{\text{cm}^3 \cdot \text{s}} = \boxed{690 \text{ W/cc}}$$