100 krad a quanti Pb in silicio

1 MIP rilascia ~ 3.8 MeV * cm in silicio
1 MIP Pb rilascia circa 3.8 * 82^2 MeV/cm ~ 25.55 GeV/cm

1 MIP Pb in 300 um di silicio: 25.55 GeV/cm * 300 um ~ 0.77 GeV

Dose = Energia rilasciata / massa assorbitore
Rho = densità silicio = 2.33 g/cm^3
S = superficie volume considerato
D = spessore volume considerato
100 rad = 6.25 * 10^18 eV/kg

$$\frac{energia}{massa} = \frac{0.77\,GeV \cdot N_{particelle}}{rho \cdot S \cdot d} = \frac{0.77\,GeV}{300\,um} \cdot \frac{N_{particelle}}{rho \cdot S} = \frac{25.55 \cdot 10^3\,eV}{cm} \cdot \frac{N_{particelle}}{rho \cdot S} = 100 \cdot 10^3\,rad \rightarrow \frac{N_{particelle}}{S} = Fluence \rightarrow$$

$$\rightarrow 25.55 \cdot 10^3\,eV \cdot \frac{cm^2 \cdot Fluence}{2.33 \cdot g} = 6.25 \cdot 10^{18} \cdot \frac{eV}{g} \rightarrow Fluence = \frac{6.25 \cdot 10^{18}}{25.55 \cdot 10^3} \cdot \frac{2.33}{cm^2} = 5.7 \cdot 10^{14} \cdot \frac{1}{cm^2} \rightarrow Flux = \frac{5.7 \cdot 10^{14}}{4 \cdot 7 \cdot 24 \cdot 60^2\,s \cdot cm^2} = 2.4 \cdot 10^8 \cdot \frac{1}{cm^2 \cdot s}$$