

(10.3) What background from cosmic radiation is expected for an unshielded 100 ml ion chamber which exhibits an area of 100 cm² perpendicular to the direction of the cosmic radiation?

First a definition of Bq.

$$Bq := \text{sec}^{-1}$$

The given data:

$$Volume := 100 \cdot \text{cm}^3$$

Calculations:

$$I_0 := 2.5 \cdot \text{cm}^{-3} \cdot \text{sec}^{-1} \quad \text{Fig. 10.1 gives 2 - 3 ion pairs cm}^{-3} \text{ s}^{-1}; 2.5 \text{ used here is the average.}$$

$$R_0 := Volume \cdot I_0 \quad R_0 = 250 \cdot Bq \quad (250 \text{ Bq or } 250 \text{ counts/sec})$$