(8.2) Estimate the fraction of energy lost through bremsstrahlung for a β-emission of E_{max}=2.3 MeV, when absorbed in aluminum. The decrease of particle energy as well as the continuos β-spectrum must be taken into account.

$E_{max} := 2.3$ $\quad E_{average} := \frac{E_{max}}{3}$ $\quad E_{average} = 0.767$ MeV

Assume: $E_e := E_{average}$

$dedx_{coll} := 1$ $\quad Z := 13$ For aluminum

$dEdx_{brems} := E_e \cdot \frac{Z}{800} \cdot dedx_{coll}$ Eqn. (7.16)

Fraction lost (%): $P := \frac{dEdx_{brems} \cdot 100}{dEdx_{brems} + dedx_{coll}}$ $\quad P = 1.231$ %