(4.1) ^{239}Pu emits alpha particles of maximum 5.152 MeV. What is the recoil energy of the product nucleus?

Given are: $E_\alpha := 5.152$ MeV $A := 239$

$A_d := A - 4$ Because the mass number A is unchanged in low energy reactions, eqn. (4.7).

$Q_\alpha := E_\alpha \cdot \frac{A}{A_d}$ From eqn. (4.16) $Q_\alpha = 5.240$ MeV

$E_d := Q_\alpha \cdot \frac{4}{A}$ From eqn. (4.15) $E_d = 0.088$ MeV (^{235}U)