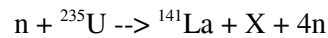


War & Peace Cluster, Summit Program
Physics Assignment 8

Fission reactions

1. Given the fission reaction



- a. What nucleus is represented by the X? (Hint: both atomic number and mass number has to be conserved.)
 - b. What is the (combined) kinetic energy of the neutrons? (Assume that the incident neutron has negligible kinetic energy.)
2. Using the answer to the previous question, how many reactions per second are needed to produce a reactor rates at 200 MW?
3. How many ${}^{235}\text{U}$ atoms are needed to operate the reactor for a year?
4. What is the mass of uranium need to operate the reactor for a year if
- a. Only ${}^{235}\text{U}$ is used?
 - b. Natural uranium containing only 0.7 % ${}^{235}\text{U}$ is used?
 - c. Enriched uranium containing 4 % ${}^{235}\text{U}$ is used?