AP 4010 Introduction to Nuclear Science
Fall 2004

Homework Assignment 9:   Due   December 7, 2004

NOTE: Our final quiz will be on Tuesday, December 14. The quiz will emphasize Chapters 3, 4, 10, and 11, but it will also have questions related to all other chapters discussed in the course. As before, the quiz is open book and open notes.

1. Consider the fission of ^{236}U into two fragments A_1 and $A_2 = 236 - A_1$. The Coulomb barrier associated with these two fragments is equal to

$$V = \frac{1}{4\pi\varepsilon_0} \frac{Z_1 Z_2 e^2}{(R_1 + R_2)}$$

   where R_1 and R_2 are the radii of the two fragments and Z_1 and Z_2 are the charge of each fragment. Approximately plot the Coulomb repulsion energy as if they form with their radii just touching at their surfaces. Assume that Z/A is equal to the same ratio for ^{236}U. Suggest a reason for the fission yield curve shown in Fig. 10.2 on page 265.

2. Do Problem 11.2 in the textbook, and also consider the reaction d(d, p)^{3}He.