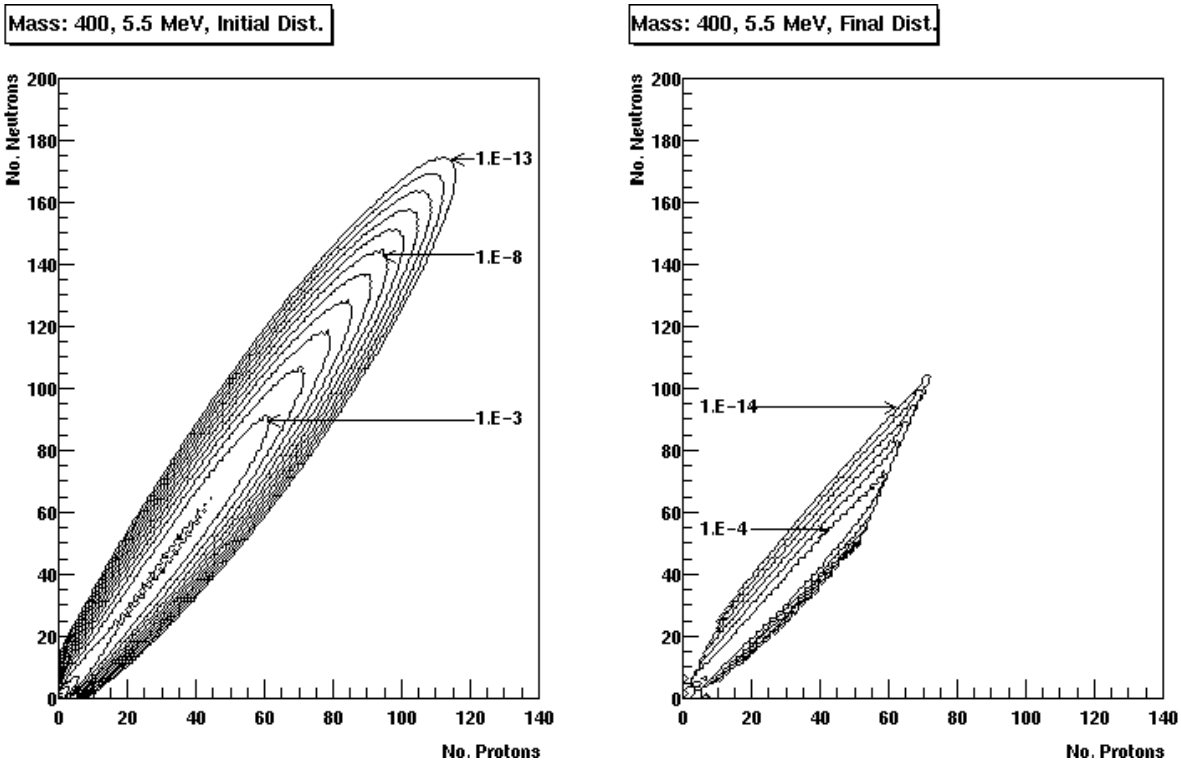


# Statistical Multifragmentation Calculations for Heavy Nuclei

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The statistical multifragmentation software program, **EASY**, written by Scott Pratt at Michigan State University has been used to predict the multiplicities of the various products from fragmentation of heavy nuclei,  $A=200-400$ . The defining characteristic of this program is the ability to analytically calculate yields of rare isotopes resulting from the multifragmentation. Any initial system can be specified along with its temperature. The initial distribution directly after multifragmentation and the final distribution after secondary decay are both calculated. From this information, two-dimensional histograms of neutron number vs. proton number can be produced. Figure 1 shows such a plot for a nucleus with  $Z=160$ ,  $A=400$ , “Pseudoaggieum”.



**Figure 1:** Initial and final plot of neutron number vs. proton number with multiplicities on the z-axis.

A one-dimensional histogram of the total mass distribution both before and after secondary decay appears in Figure 2.

Figure 3 depicts calculated isotope yields for several selected elements. It is our goal to use these data to predict the existence of various isotopes and heavy elements after multifragmentation and decay resulting from initially massive nuclei. Such information will be used in planning future experiments for NIMROD and for the BigSol super-conducting solenoid spectrometer.

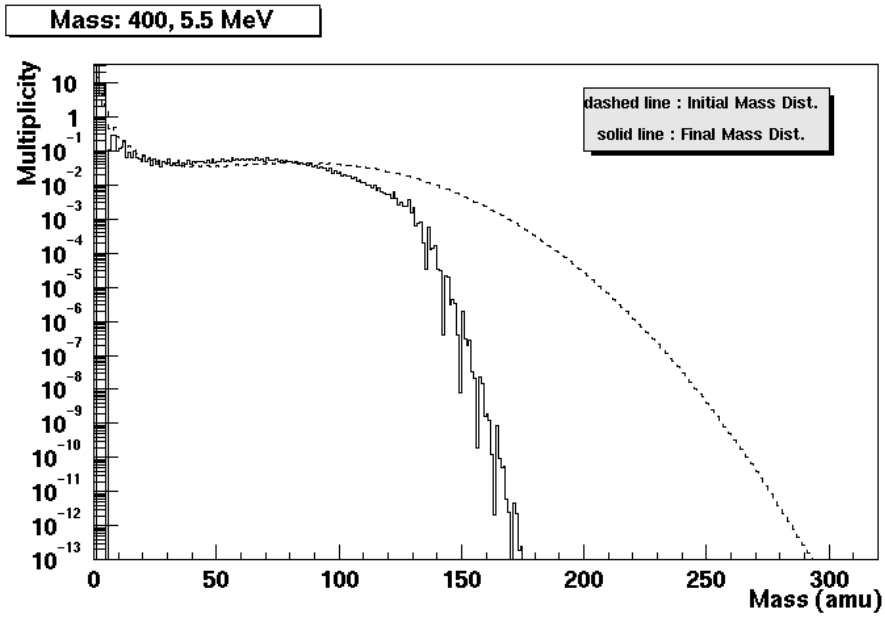


Figure 2: Initial and final mass distribution for the initial system of mass 400 and 5.5 MeV.

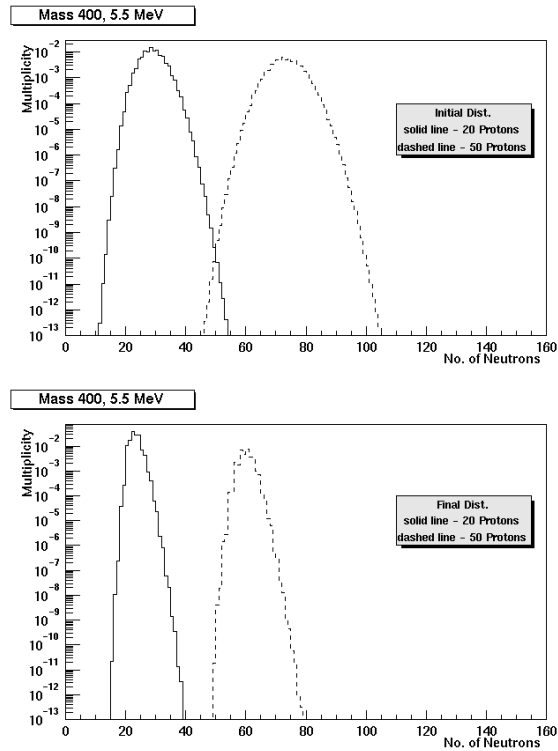


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