Boston Area QuarkNet

2022 Summer Workshop: Fusion

August 10-11, 2022

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Name

Curve of Binding Energy Worksheet

1. On the class list of elements, write your initials next to an element from each of the three Z ranges below.  
   Z = 1 – 32   
     
   Z = 33 – 64  
     
   Z = 65 – 96
2. Choose a stable isotope of each of your elements.   
   Determine the corresponding N (number of neutrons) and A (number of nucleons) and atomic mass (u units) of each of your isotopes.  
   Write your values below.  
     
    Z = N = A = Mass = u  
     
    Z = N = A = Mass = u  
     
    Z = N = A = Mass = u
3. Proton mass = *m*p = 1.00727647 u Neutron mass = *m*n = 1.00866490 u  
     
   Electron mass = *m*e = 0.00054858 u 1 u = 931.49432 Mev/*c*2  
     
   Calculate the binding energy per nucleon for your elements:  
     
    Binding Energy/Nucleon = E/A = ((Z*m*p + N*m*n) – (Mass-Z*m*e))/A  
     
    Z = A = E/A =  
     
    Z = A = E/A =  
     
    Z = A = E/A =