

radioactive

unstable nucleus (breaks down), throws off particles
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ratio of prot. to neutrons

smaller, more stable atoms - ratio of 1:1
 larger, less stable not ratio of 1:1

Particles created by radioactive decay

beta (β) particle \rightarrow ${}_{-1}^0e$

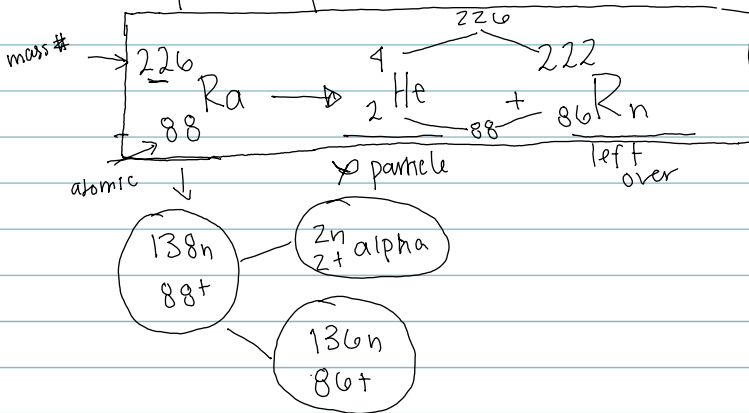
positron \rightarrow ${}_{+1}^0e$

electron capture ${}_{-1}^0e \rightarrow$

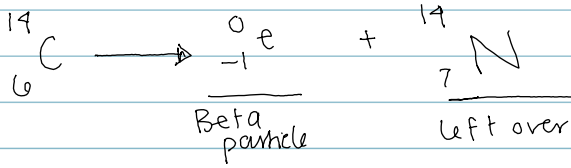
alpha particle \rightarrow ${}_{2}^4He$

gamma-ray γ

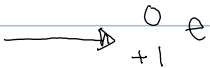
ex. alpha particle production



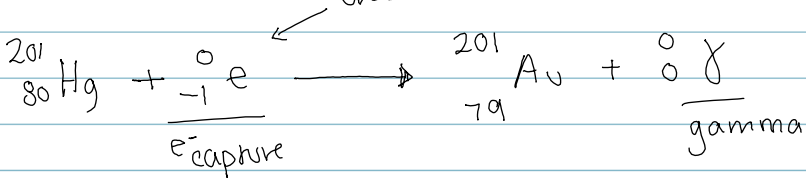
ex. β particle production



o positron:

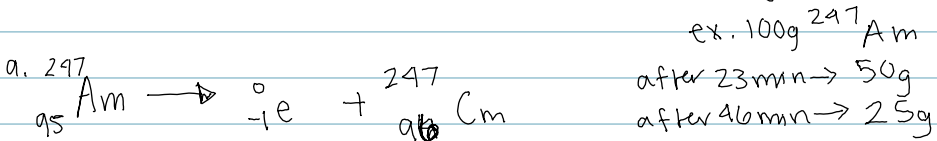


ex. electron capture



Half-Life

* time it takes for 1/2 of sample to decay



b. How many half-lives for 75% of a ~~350~~³⁵⁰ gram sample?

1 cycle 50%
 2 cycle 25% > 2 cycles

c. half-life: $\frac{92 \text{ min}}{23 \text{ min}} = 4 \text{ cycles}$

$\frac{1000 \text{ g}}{\text{sample}} \times \left(\frac{1}{2}\right)^{\text{④}} \rightarrow \text{H of cycles}$