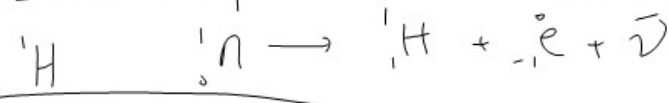
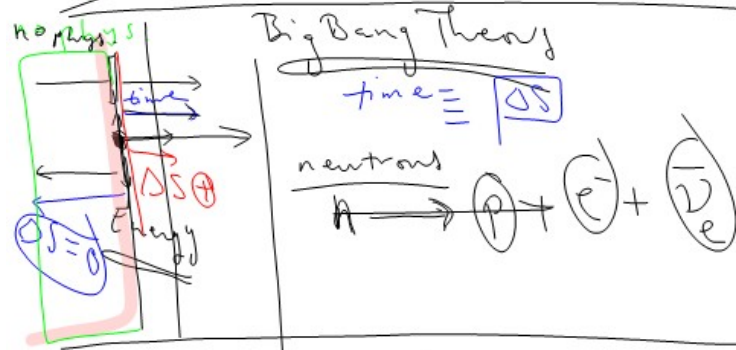


Elements

Modern Science

2nd Law: $\Delta S_{\text{univ.}} = \Delta S_{\text{syst.}} + \Delta S_{\text{surr.}}$

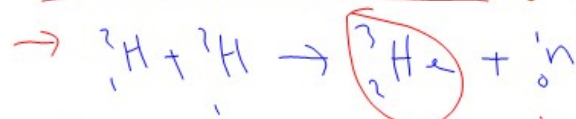
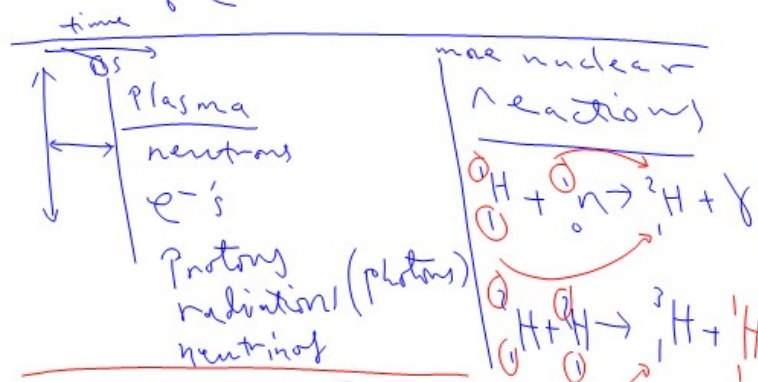
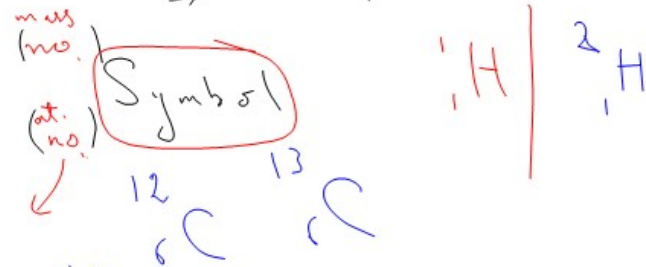


${}^1_1H \equiv$ proton $1.007 \text{ amu} \Rightarrow$
 $\gamma \equiv$ radiation $\nu = v. \text{ high} / \lambda \text{ short}$
 $E = h\nu$

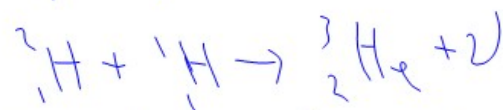
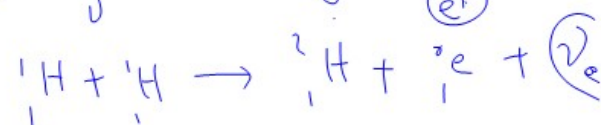
${}^0_{-1}e \equiv e^- \equiv$ electron $(\frac{1}{1836}) \text{ amu}$

${}^0_{+1}e \equiv$ positron $(\frac{1}{1836}) \text{ amu}$

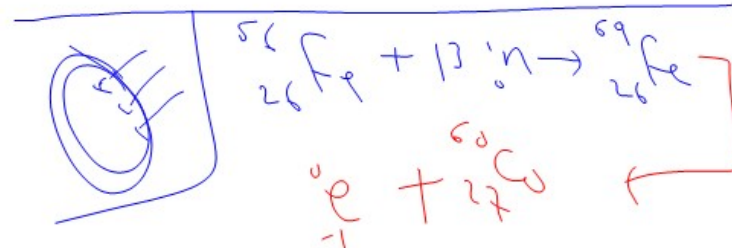
element $\Rightarrow$ isotopes



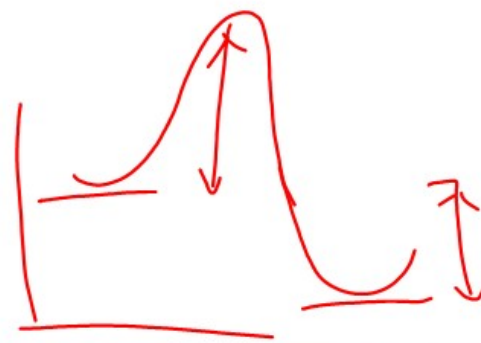
Hydrogen burning (e^+)



Helium Burning: ${}^4_2He \rightarrow {}^8_4Be + \gamma$



Radioactivity
Fusion //



Fission // - by external effect
 - by self

$t_{1/2}$

by itself $\equiv$ radioactivity

1st Order rxn.: $\text{Rate} = k[A]^1$

const. const. const.

$\therefore t_{1/2} \equiv \text{const.}$

$t_{1/2} = 5730 \text{ years}$ $^{12}\text{C} : ^{14}\text{C}$

98 : 2
 99 : 1

$k = A e^{-E_a/RT}$			^{12}C	^{13}C	^{14}C
^1_1H	^2_1H	^3_1H	^6_6C	^6_6C	^6_6C
1 prot.	-	1 prot.	1:1	6:7	6:8
0 neut.	-	2 neut.	1:1	1:1/6	1:1/2
$^{234}_{92}\text{U}$	$^{235}_{92}\text{U}$	$^{238}_{92}\text{U}$			
92: (234-92)	92: (235-92)	92: (238-92)			
					1:1.6

سریا

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