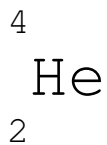


## Radioactive Decay Processes

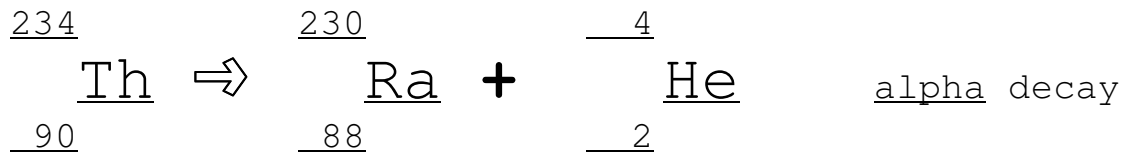
- result when nuclei are not 100 % stable
- three main types: alpha, beta and gamma decay
- also fission and fusion reactions

### Alpha Decay:

- produces an alpha particle which is a helium atom nucleus



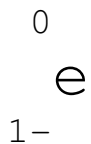
- penetrating ability - stopped by one piece of paper



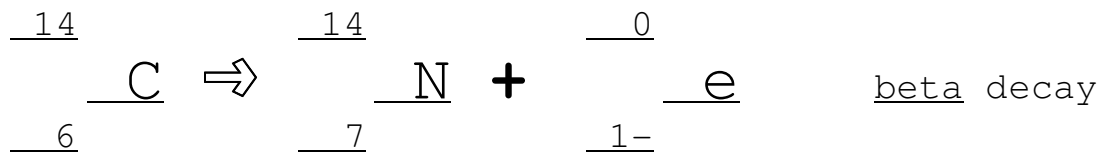
- the symbol is  $\alpha$

### Beta Decay:

- produce a beta particle - high speed electron (10 % the speed of light)



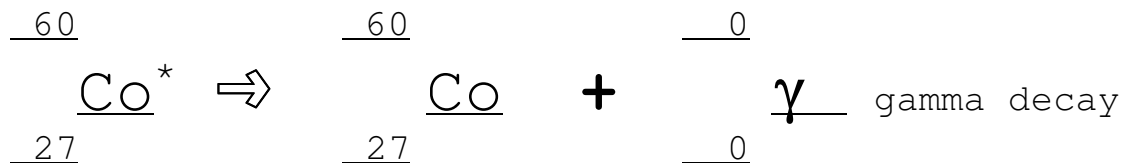
- penetrating ability - stopped by 1 cm of water



- symbol  $\beta$

### Gamma Decay:

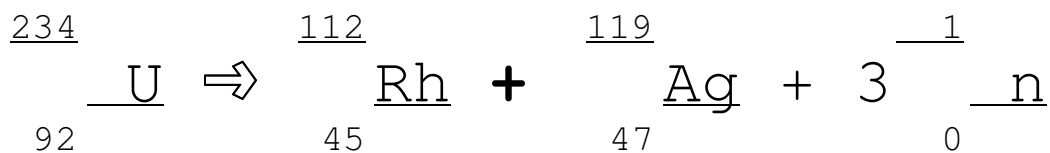
- produces a gamma particle - high energy light photon (travels at the speed of light)
- penetrating ability - stopped by 1cm of lead or 30 cm of good concrete



- gamma decay accompanies some other process
- \* designates a high energy unstable nucleus
- symbol is  $\gamma$

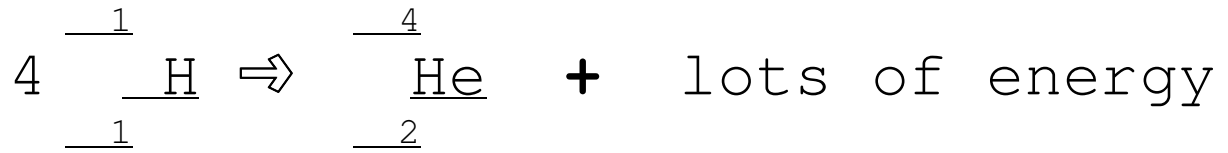
### Fission Reaction:

- unstable nuclei split into two or more daughter nuclei (frequently produces a few neutrons as well)



**Fusion Reaction:**

- don't always obey the math



- this is the fusion reaction that powers the sun