


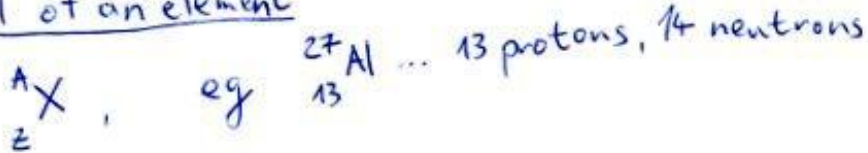
# 4 Properties of Nucleus

 → two types of particles: protons and neutrons

quantities:

- Z ... atomic number → # of protons in nucleus
- N ... neutron number → # of neutrons - n
- A ... mass number → # of nucleons (= neutrons + protons)

symbol of an element



isotopes

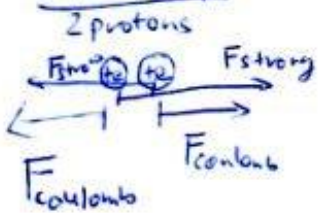
${}^{12}_6 C$  ... 98.9% abundance in nature ;  ${}^{13}_6 C$  ... 1.1%

charge and mass

	mass [kg]	charge [C]
proton	$1,673 \cdot 10^{-27}$	$1,602 \cdot 10^{-19}$
neutron	$1,675 \cdot 10^{-27}$	$0$
electron	$9,109 \cdot 10^{-31}$	$-1,602 \cdot 10^{-19}$

size of atom cca  $10^{-10}$  m, size of nucleus  $10^{-15}$  m.

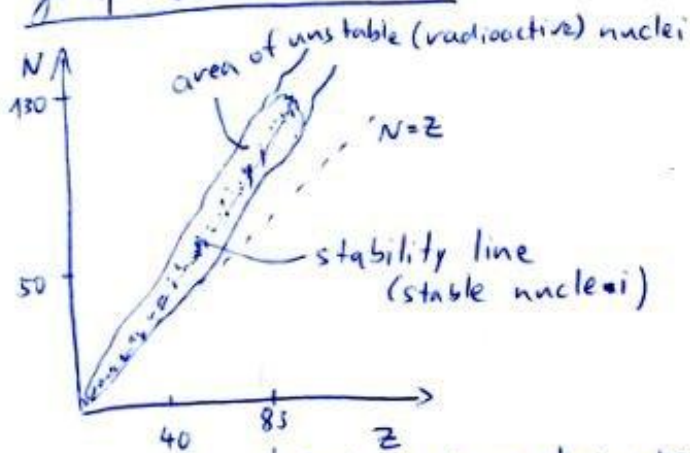
stability



$F_{strong}$  ... short range, attractive, between all nucleons, bigger

$F_{coulomb}$  ... long range, repulsive, between protons

graph of N versus Z



last stable nucleus, when  $Z > 85$ , stable nucleus cannot be built