James Chadwick

- Neutrons-account for extra mass in nucleus
  - No charge (n^0)
  - Mass= $1.67x10^{-24}g$

Neils Bohr

- Nucleus contains p+ and n^0
- Electrons travel around nucleus in circular orbits (fixed energies)

# of protons determines type of element

- (atomic #) = # of P+
- For neutral atoms: # of e- = # of p+
- # of neutrons varies

Atomic notation

- Mass #: (# of p+) + (# of n^0)

Isotopes

- Atoms of the same element w/ different # of neutrons

Ex.

- 1 atomic mass unit (amu)= 1/12 the mass of a $^{12}_{6}C$ atom
- Atomic masses on the periodic table are weighted averages of all naturally occurring isotopes

Isotopes of carbon	Mass(amu)	Abundance(%)
^{12}C	12.00	98.89%
^{13}C	13.003	1.11%

Assume 100 atoms:

Current atomic model

- Dense atomic nucleus contains p+ and n^0
- Electrons exist as "waves" surrounding the nucleus in the shape of orbitals
  - Each orbital has a specific shape/energy
  - Describe by quantum numbers (integers)
-