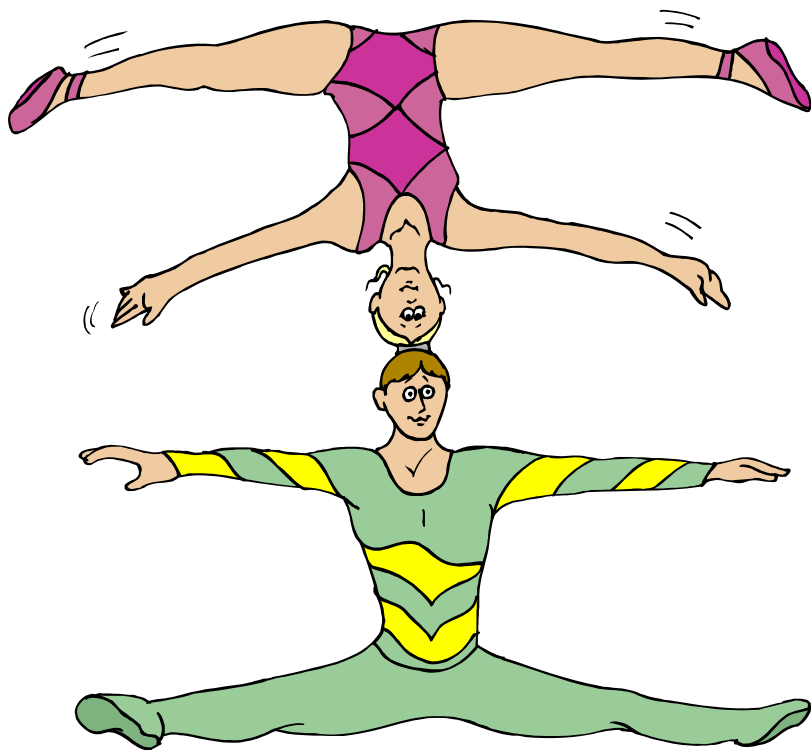
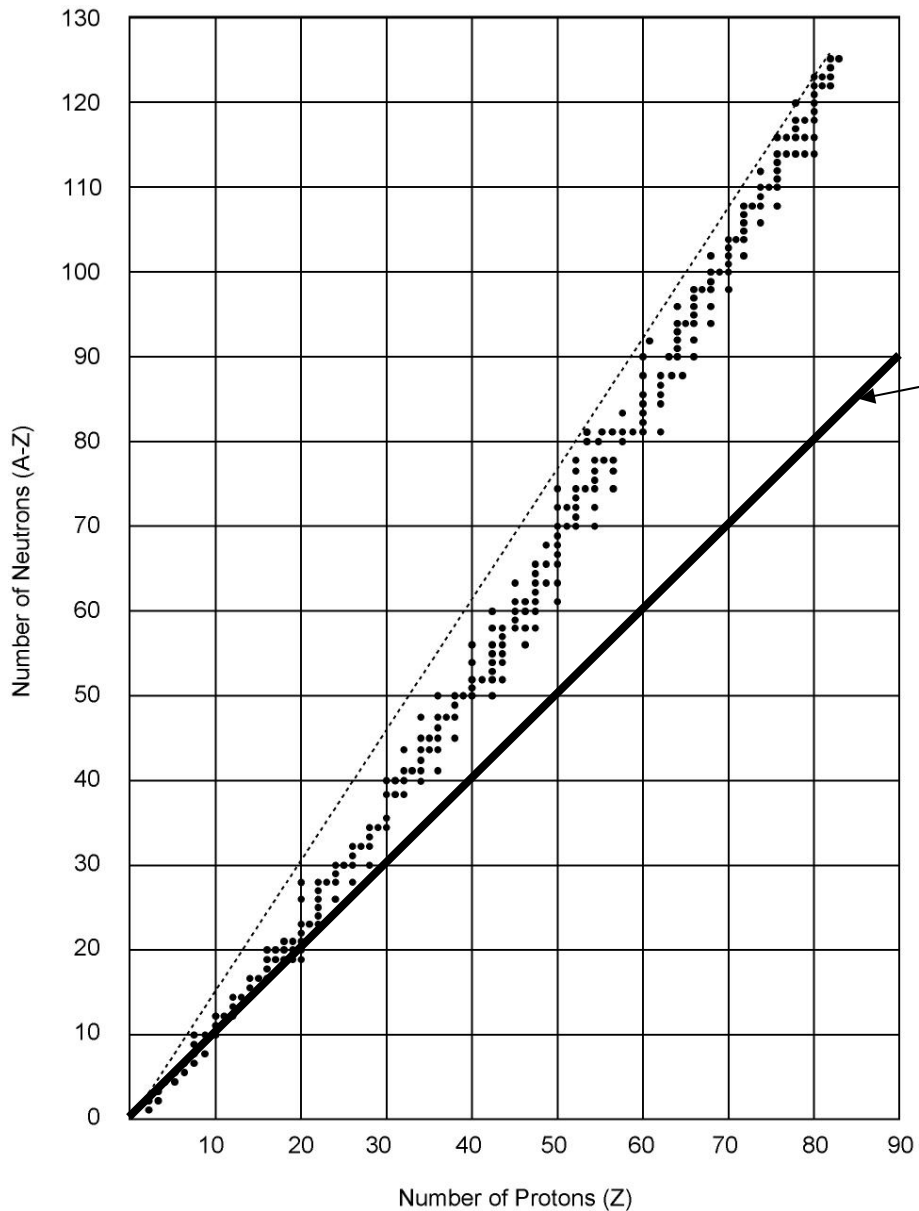


Nuclear Stability and Instability



Beta Decay



U-238, 1.59:1

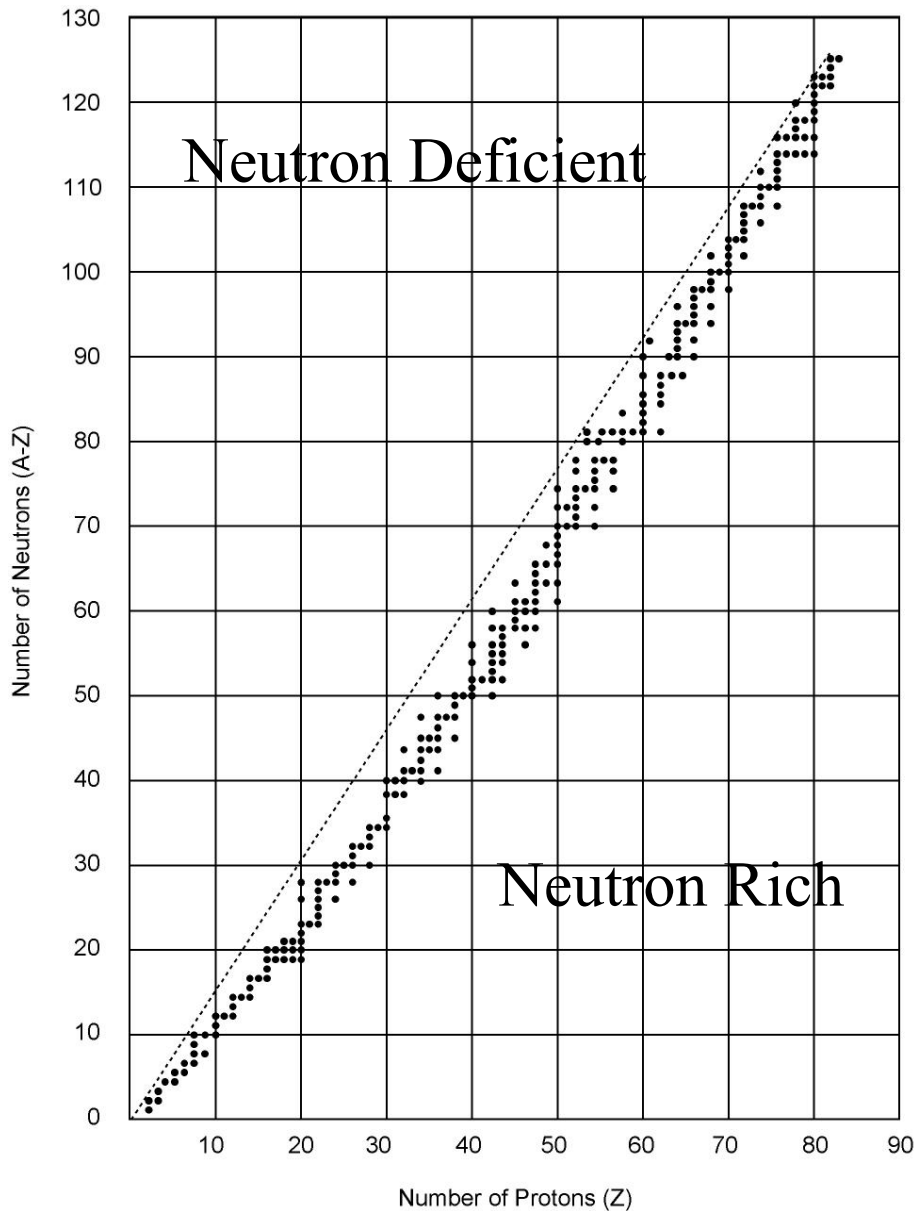
n:p, 1:1

Zn-90, 1.25:1

O-16, 1:1



Beta Decay



Neutron Rich

- B⁻ decay
- Many in a reactor

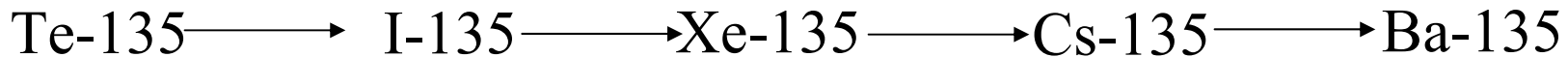
Neutron Deficient

- Rare in reactors
- B⁺ decay
- Electron capture



Beta Decay Chains

- ★ U-235, n:p = 1.53
- ★ Fission fragments are neutron rich
- ★ Decay in a chain until a stable nuclide is reached



Alpha Decay

- ★ Large nuclei
- ★ $Z > 83$
- ★ U-238 and U-235

