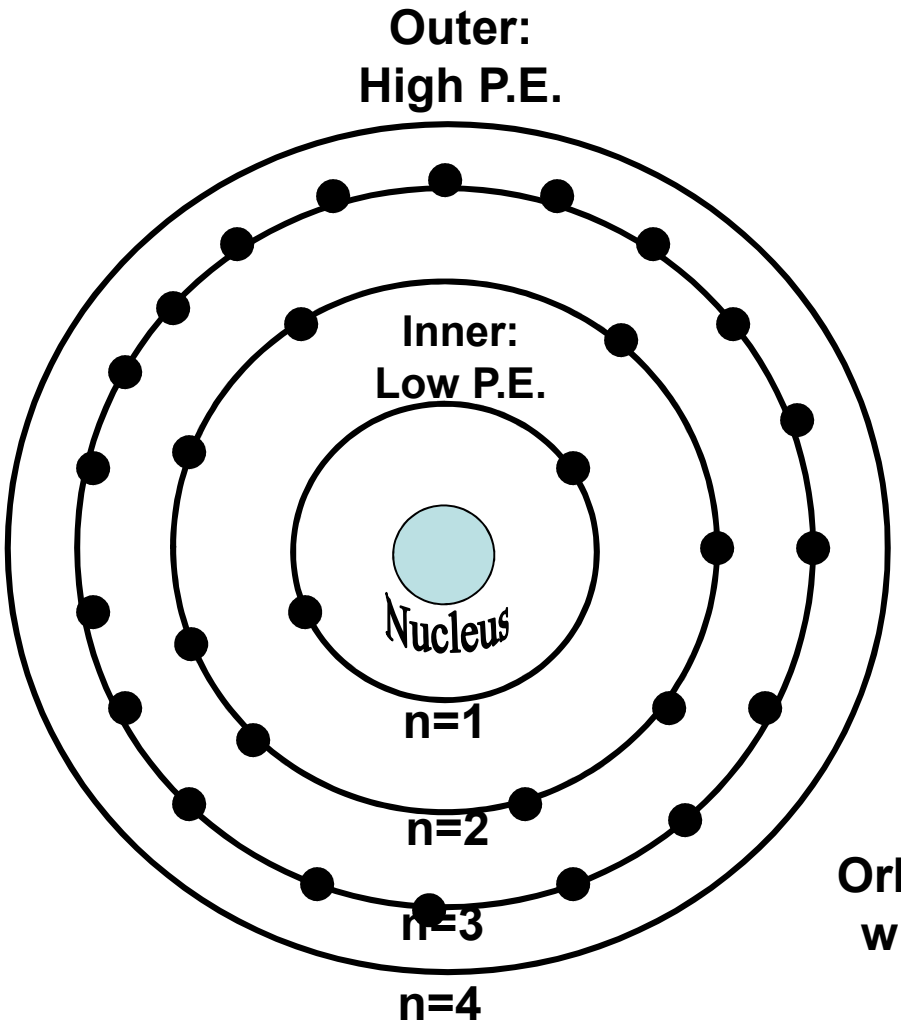
What would an atom have to be like to exhibit line spectra?



Maximum Capacity

$2n^2$

n=1.....2 electrons

n=2.....8 electrons

n=3.....18 electrons

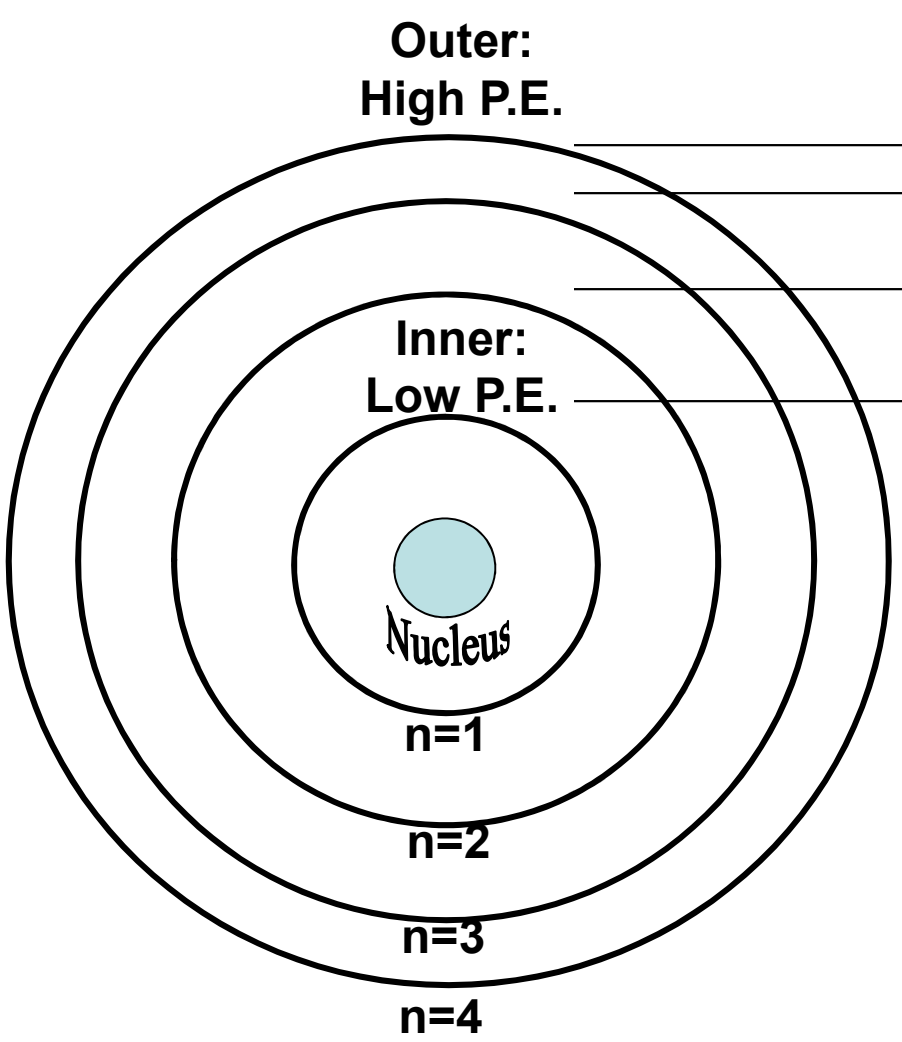
Niels Bohr
(1885-1962)

Bohr model of the atom.

Orbits labeled with the "n" number

Theorized that electrons occupy distinct orbits around the nucleus.

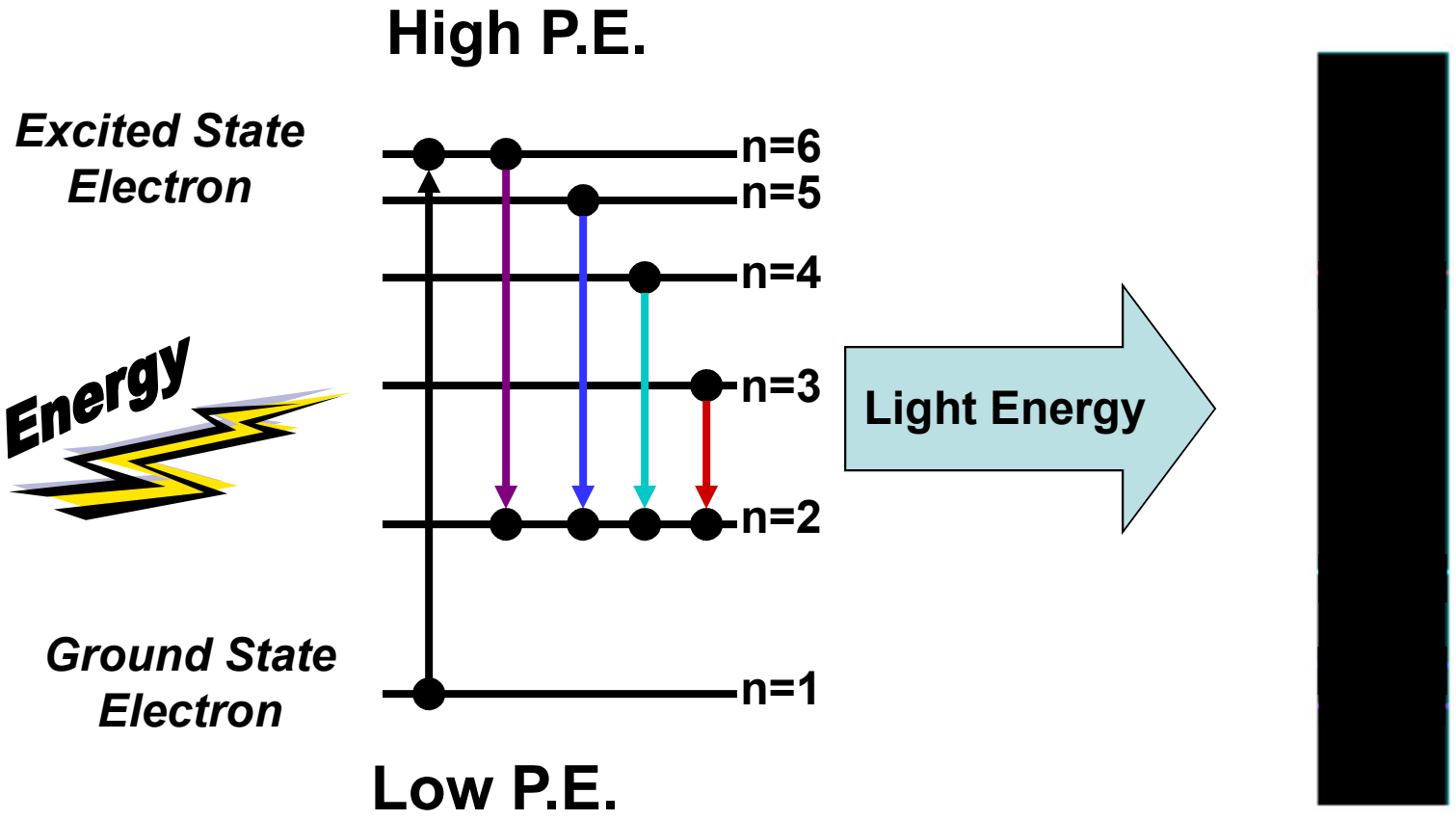
What would an atom have to be like to exhibit line spectra?



Abbreviation for Bohr Atom

Each line is referred to as a *STATIONARY STATE*

Electron Movement Between Stationary States

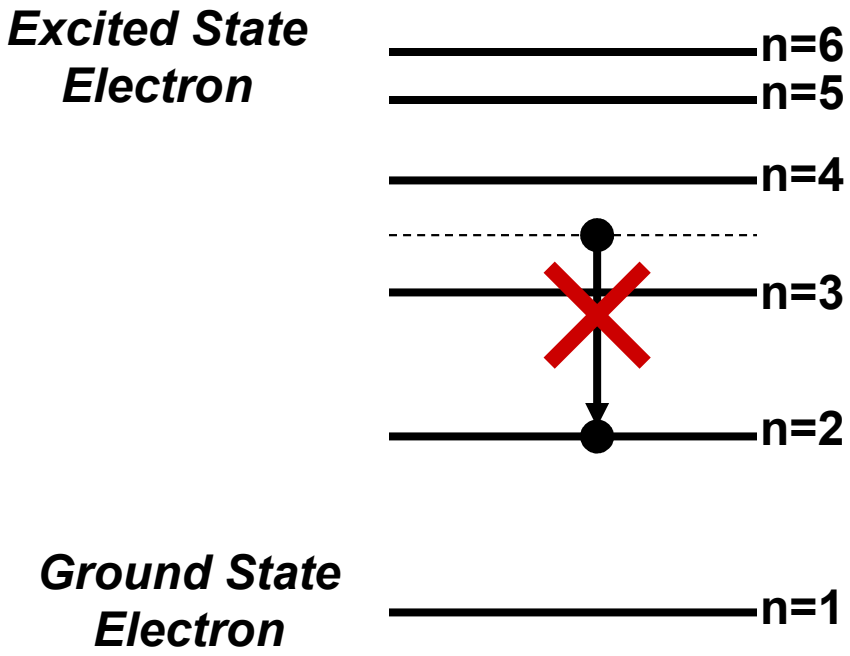


Atom *absorbs* energy: Electron(s) jump to higher stationary states.

Atom *releases light* energy: Electron(s) jump to lower stationary states.

Why don't we observe light between visible spectral lines?

Answer: Because there *are no in-between stationary states* for electrons to jump to and from.



In-between states not allowed.