

Lasers

Photons are emitted when the electrons in atoms go from a higher state to a lower state

Conversely, photons are absorbed when the electrons in atoms go from a lower state to a higher state



Fermions and bosons:

Electrons, protons, and neutrons are fermions. Two identical fermions cannot occupy the same quantum state. (exclusion principle)

Photons (and many atoms) are bosons. Unlike fermions, bosons actually “prefer” (to be explained soon) to be in the same quantum state. This is the physical principle on which lasers are based.