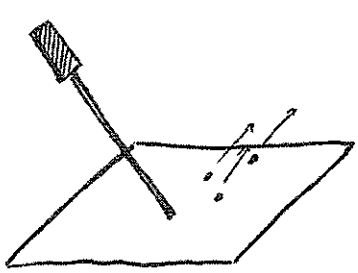
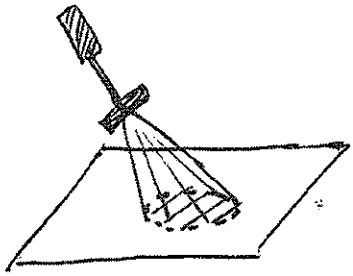


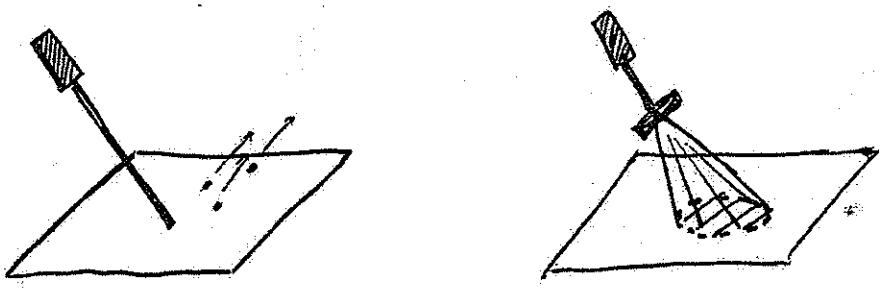


A narrow beam of light is incident on a metal. The wavelength is short enough to produce photoelectrons. If we adjust the beam to make it more diffuse (keeping the total power fixed), what happens to the current of photoelectrons?

A) It increases

B) It decreases

C) It stays the same



A narrow beam of light is incident on a metal. The wavelength is short enough to produce photoelectrons. If we adjust the beam to make it more diffuse (keeping the total power fixed), what happens to the current of photoelectrons?

A) It increases

B) It decreases

C) It stays the same

→ # photons per second hitting metal doesn't change.
- electrons are ejected by single photons

What will happen if we double the intensity of the light source (with a fixed beam area)?

A) The current of electrons will double
B) The energy of the electrons will increase
C) Both A and B
D) The current and energy will stay the same

What will happen if we double the intensity of the light source (with a fixed beam area)?

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D) The current and energy will stay the same

twice as many photons hitting per second
∴ twice as many electrons ejected per second

BUT: each photon same energy as before
∴ electrons ejected don't have more energy than before.

Why are some of the electrons moving faster than others? (assume light is a single wavelength)

A) Because they absorbed photons that had a larger energy
B) Because some electrons are lighter than others
C) Some other reason (prepare to explain)

Why are some of the electrons moving faster than others? (assume light is a single wavelength)

A) Because they absorbed photons that had a larger energy
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- some electrons are bound more tightly to metal.

- ~~electron can absorb~~
- photon can spread its energy between more than one electron.