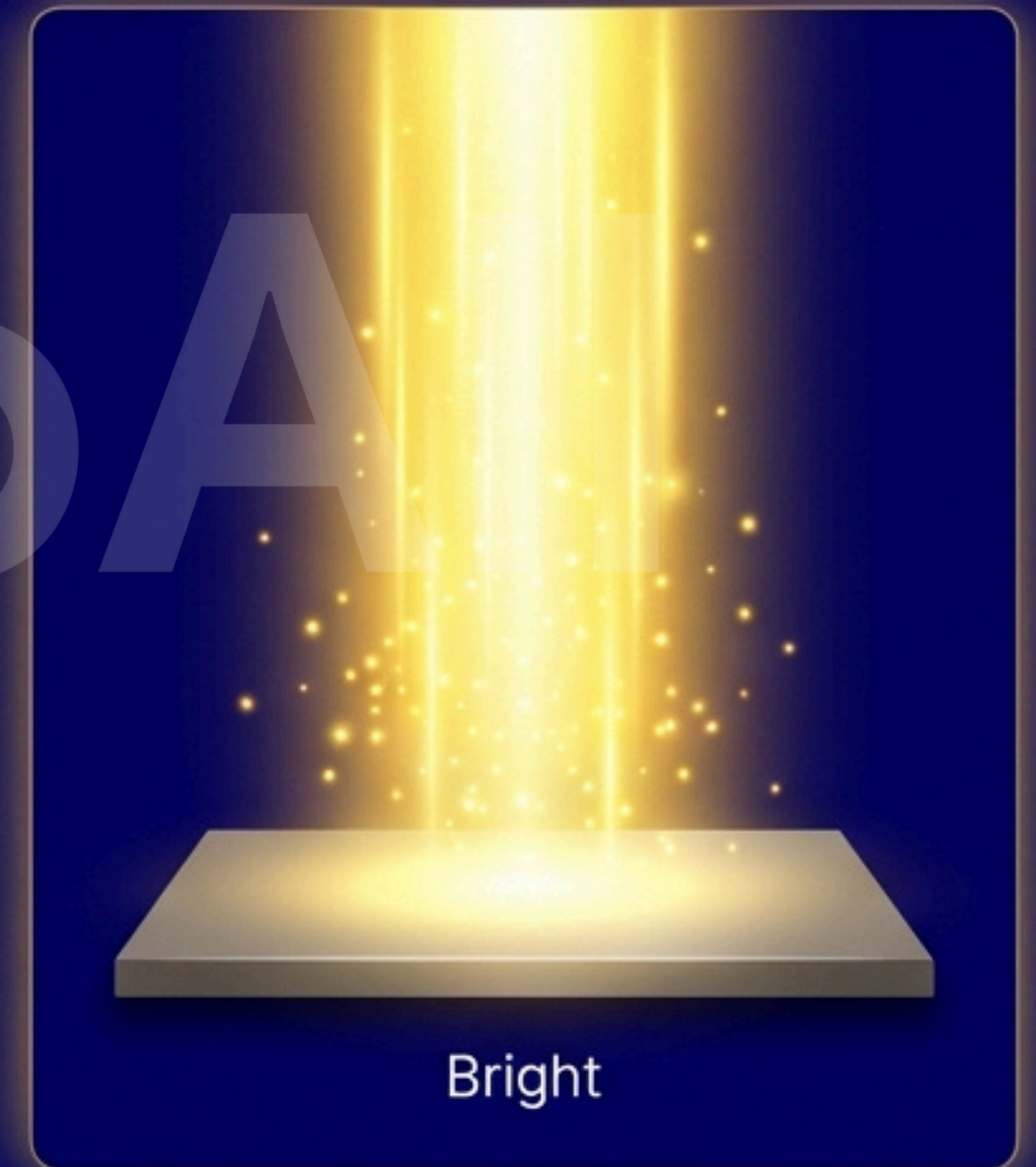
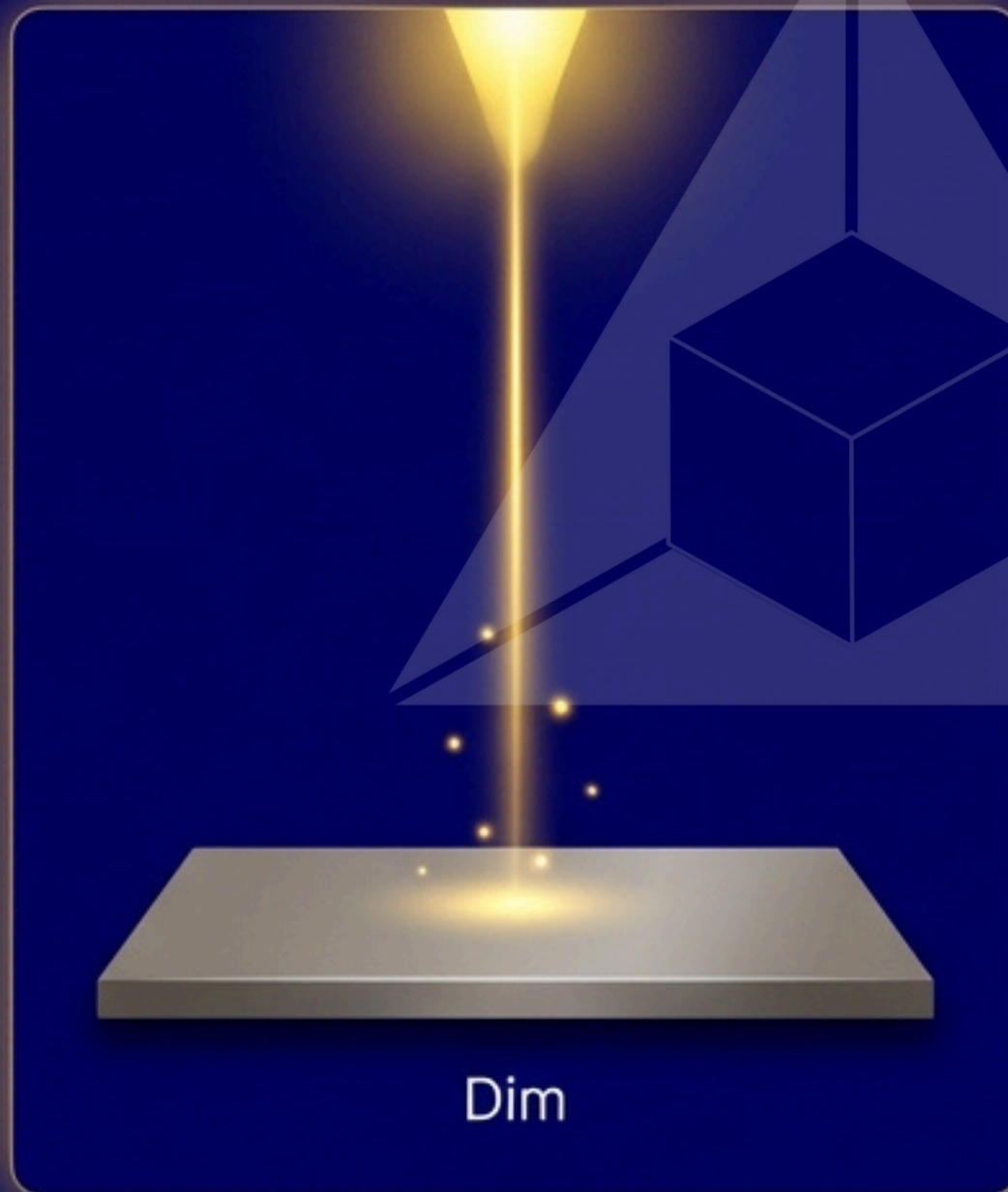


Intensity vs Photocurrent

Why brighter light gives more current.

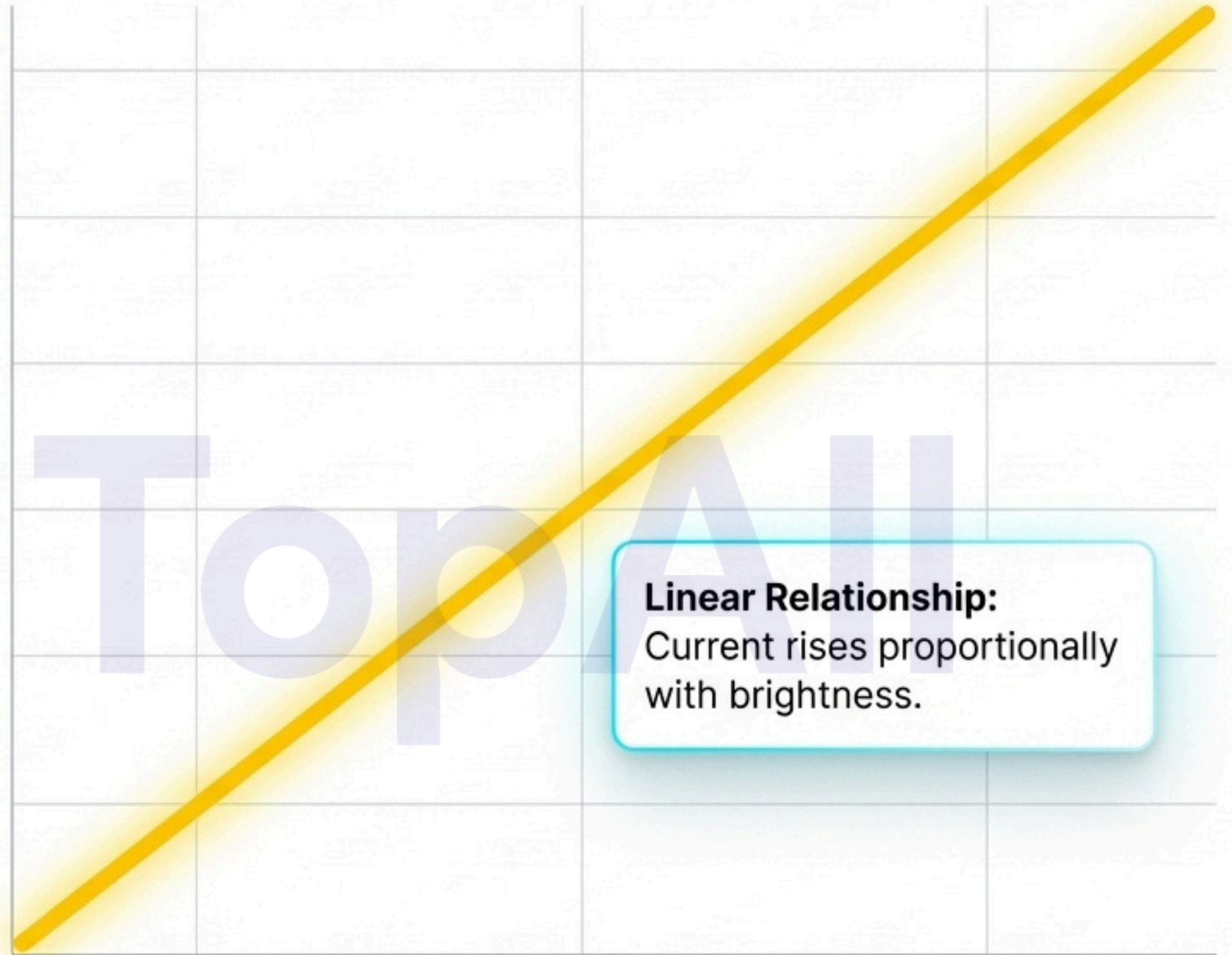


Experimental Setup

To measure the isolated effect of intensity, two variables are strictly locked:

1. **Frequency (ν):** Fixed
2. **Accelerating Potential (V):** Fixed (Positive)

Photoelectric current



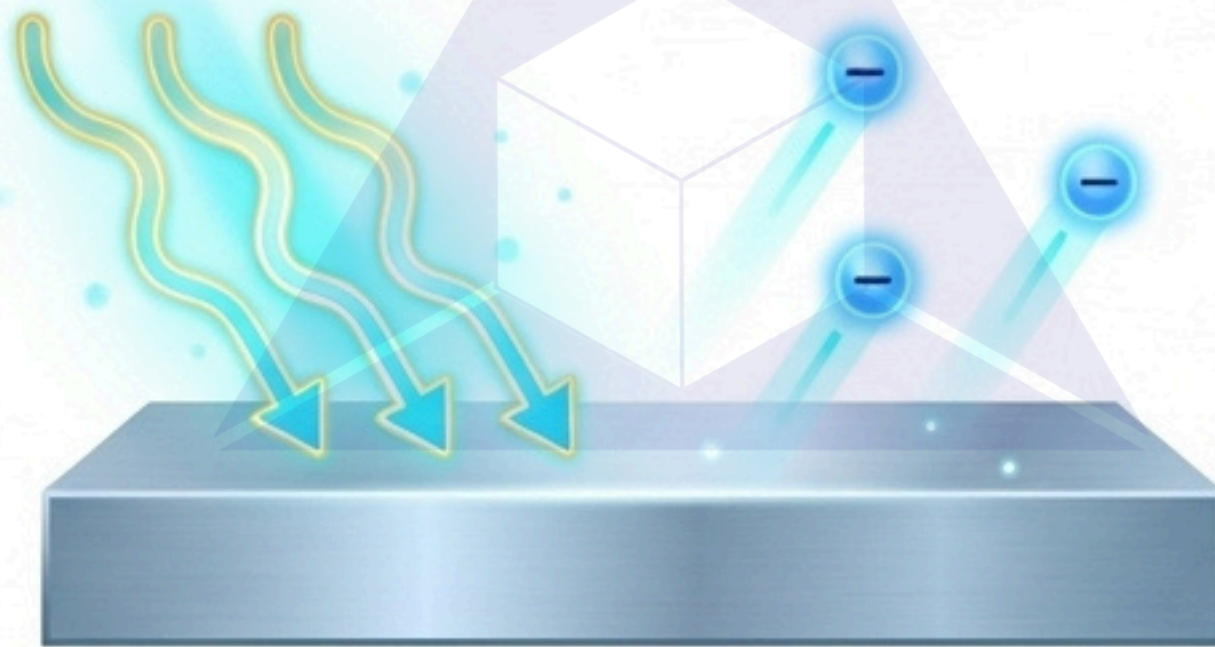
Linear Relationship:
Current rises proportionally with brightness.

Intensity of light

Why It Happens

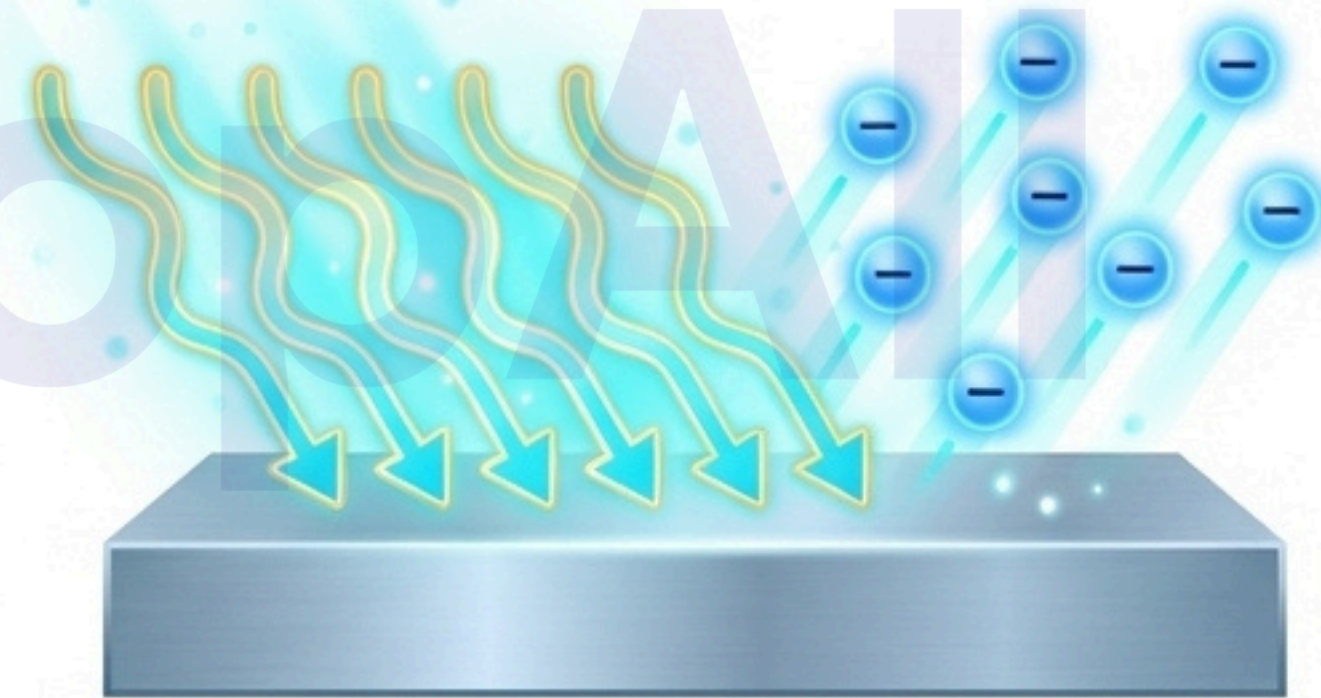
More intensity means more electrons emitted per second.

Dim Light



Low Intensity = Fewer Photons = Fewer Electrons

Bright Light



High Intensity = More Photons = More Electrons



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$$E=mc^2$$



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⚠ The Exam Trap: What Does NOT Change?



Brighter light means more electrons, not faster electrons.



Number of emitted electrons per second.

(This increases with intensity)



Maximum Kinetic Energy (K_{max}) & Stopping Potential (V_0).

(These depend ONLY on frequency and the emitter material, completely independent of intensity)

Key Takeaways



Photocurrent $\propto$ Intensity

The photoelectric current is directly proportional to the intensity of incident light.



Particle Count Increases

Higher intensity means the number of photoelectrons emitted per second increases.



Variables Locked

This linear relationship holds true only when the frequency of incident radiation and the accelerating potential are fixed.



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