

**APPLIED PHYSICS LAB**

**Lab Report: To Study Variation of Photoelectric**

**Effect Current with Intensity of Incident Light**

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**PHOTOELECTRIC CURRENT:**

The phenomenon in which electrons are emitted from the surface of a metal/conductor when light(uv light) falls upon it. The current produced due to photoelectric effect is called photoelectric current.

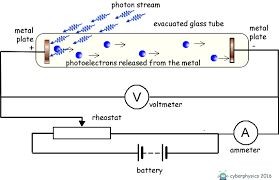
**WORKING PRINCIPLE:**

The working principle of this experiment is based upon photoelectric effect.

**APPARATUS:**

1. Voltmeter.
2. Micrometer
3. Power Supply
4. Meter Rod
5. Photoelectric Effect.

**DIAGRAM:**



**PROCEDURE:**

* 1. First of all, I turned on the light from a source and let it fall on the metal surface at some particular distance measured with a meter rod
  2. The electrons emitted from the metal surfaces due to incident beam called photons and the current produced due to photons is called photoelectric current.
  3. The microammeter is connected in series with the circuit which showed the little current readings and deflection.
  4. The light from the source is incident on the cathode in a bulb.
  5. By increasing or decreasing the distance between the bulb and cathode, the micrometer showed deflection.
  6. The intensity of the beam depends upon the distance of the source from the tube given by the formula.
  7. Then I changed the voltage to get different values and the plotted the graph.

# READINGS:

For voltage V=200 volts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No. | Distance, d | Angle,θ(µA) | d2 |  |
| 1 | 55 | 8 | 3025 | 3.30 x 10-4 |
| 2 | 50 | 9 | 2500 | 4.00 x 10-4 |
| 3 | 45 | 10 | 2025 | 4.90 x 10-4 |
| 4 | 40 | 13 | 1600 | 6.25 x 10-4 |
| 5 | 35 | 16 | 1225 | 8.16 x 10-4 |
| 6 | 30 | 22 | 900 | 11.11 x 10-4 |
| 7 | 25 | 31.5 | 625 | 16 x 10-4 |
| 8 | 20 | 55 | 400 | 25 x 10-4 |

For voltage V=150 volts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No. | Distance, d | Angle,θ(µA) | d2 |  |
| 1 | 55 | 5 | 3025 | 3.30 x 10-4 |
| 2 | 50 | 5.5 | 2500 | 4.00 x 10-4 |
| 3 | 45 | 6.5 | 2025 | 4.90 x 10-4 |
| 4 | 40 | 8 | 1600 | 6.25 x 10-4 |
| 5 | 35 | 9.5 | 1225 | 8.16 x 10-4 |
| 6 | 30 | 12.5 | 900 | 11.11 x 10-4 |
| 7 | 25 | 17 | 625 | 16 x 10-4 |
| 8 | 20 | 26 | 400 | 25 x 10-4 |

# PRECAUTIONS:

## The connections should be neat and clean.

1. Wire ends should be cleaned with sandpaper.

## Shunt the ammeter to prevent from damage.