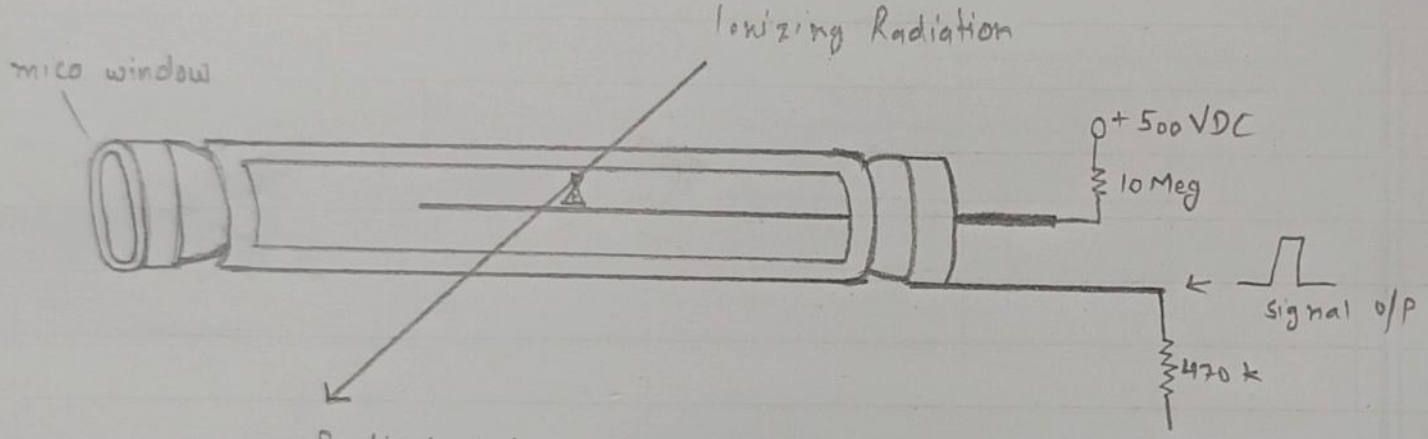
Aim: To verify inverse square law by using distribution method, using G.M. counter

Apparatus:- G.M counter, GM tube, Radioactive source (gamma)



Geiger Muller Tube

Table:

Sr.no	Count (I)	Distance (x) (cm)
1	44	10
2	45	9
3	45	8
4	68	7
5	117	6
6	130	5
7	232	4
8	427	3
9	1062	2

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Aim: To verify the inverse square law by using distribution method, from a radioactive source using a G.M. counter.

Apparatus: G.M. counter with inbuilt power supply EHT (250-2000 V) (count capacity 6 digits), 3½ inbuilt Digital volt meter for GM Tube voltage, 3 digit programmable timer with display, G.M. Tube mounted with Acrylic stand with lead and Aluminium absorbents Radioactive source: Beta or Gamma (in lead container and wooden box)

Theory: The inverse square law is a fundamental principle that describes how the intensity of a physical quantity (such as light, sound or radiation) decreases with increasing distance from the source.
A radioactive source emits radiation that is detected at various distances using the G.M. counter.
According to inverse square law, the intensity of radiation should be inversely proportional to the square of distance from the source that is

$$I \propto \frac{1}{r^2}$$

Where I is intensity of radiation and r is distance from the source. Radiation counts were recorded at multiple distances. The Distribution method was employed to minimize errors.

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Graph

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Procedure:

1. Connect GM Tube with power supply, switch on the instruments, set the time period 30 sec using their panel controls, Make counter Reading initially zero with reset switch
2. ~~Switch~~ Set voltage 500 V using knobs & pulser switch
3. Place radioactive source in GM Tube over the sliding tray at most last slots.
4. Press start and wait untill timer complete their 30 second period, after that note the counts value. Increase distance & measure counts again.....
5. Plot graph between distance vs counts

Precautions:

1. Protecting the detector window from damage.
2. handling radioactive sources with care.
3. using appropriate shielding.
4. Never touch G.M. Tube window directly.

Results:

1. As the distance (x) increased, the radiation (I) decreased significantly, confirming an inverse relationship
2. Background Radiation Remains constant throughout the exp

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