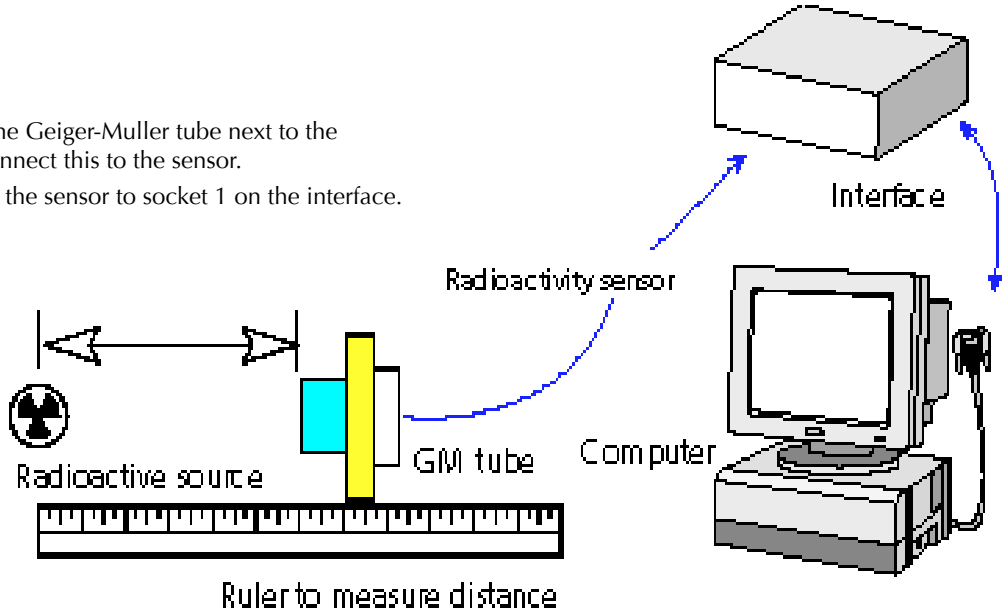
Penetration by radiation

1. Clamp the Geiger-Muller tube next to the source - connect this to the sensor.
2. Connect the sensor to socket 1 on the interface.



The radioactivity sensor is normally connected to a standard Geiger-Muller tube and provides a measure of radioactivity. In this investigation the intensity of a radioactive source is compared over different distances. The investigation can be extended to show the effect of distance and penetration through various materials - in fact this is a particularly helpful demonstration.

Apparatus

Geiger-Muller tube, clamp stand, radioactive sources - alpha, beta and gamma. Metre rule, interface, radioactivity sensor. If required, paper, aluminium and lead of different thicknesses.

Setting up

Connect the GM tube to the sensor and the sensor to socket 1 on the interface.

Some systems recognize the sensors you attach automatically, in others you do this yourself. If you can, set the range on the sensor to cover 0-50 cps. The software also needs to know that you will be entering distances, of between 0 and 100 cm, via the keyboard.

Recording the data

Start recording - you should be prompted to enter a distance at the keyboard. Set the GM tube next to the source and type in 0 for the distance.

Move the GM tube 5cm further away. Type in 5 for the distance. Continue moving the tube and entering the distance.

Using the results

How is a decreasing amount of radioactivity shown on your graph?

How does the radioactivity change with distance?

Use the software to find the relationship between count rate and distance.

Save your data on disk. Print the graph.