

# Absorption of beta

## Experiment overview:

- One of the major benefits of the Timepix detector is the way in which it visualises the different types of radiation. In this experiment you will explore what happens to the numbers of particles detected as the distance is varied and different barriers are introduced.

## Equipment:

- CERN@school kit
- Beta source (Strontium)
- Ruler
- Variety of materials and thicknesses, including paper, aluminium, perspex and lead

## Detector settings:

- Exp. count = 1-10
- Exp. time = 1-5 seconds
- Bias = no change
- Detector should be open and uncovered.
- "Integral mode" should be un-checked
- The following depends on your software version, either "Finite number of steps" should be checked **OR** "Continuous measurement" should be un-checked

The count and timing settings can be modified to suit. If the radiation strikes begin to fill the screen and the numbers of alpha, beta and gamma detected are not what you would expect, then reduce the time of the measurement but increase the count.

## Method:

- Before putting the source in place, fix the detector in position using a clamp stand and take a background reading. The cover of the detector should be open.
- Depending on the format of your source, set up the appropriate equipment to hold the source.
- Set the beta source at around 2cm from the detector.
- Beginning with paper, cover the detector and take your first measurement.
- Next, move onto the thinnest piece of aluminium and take a measurement.
- Repeat measurements for the different materials. Ensure that you save each measurement as you go, naming them so that you can return to them and analyse them later.

## Analysis:

- Compare the numbers of alpha, beta and gamma measured for the different materials and thicknesses. The results can be presented in a table or graph.



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