

You have to write a report on the analysis you did for the nuclear counting. Here is the information you should include:

- 1) A description of the detector (the AWARE Geiger counter), how it is connected to the Arduino, what data the Arduino sends to the laptop, and how it is stored in a file.
- 2) The experimental set up for the data you analyze in this report. Include the source, distance from Geiger counter, and how long you counted.
- 3) Show that your arrival time data is exponentially distributed. Compare  $\tau$  values you get a) by averaging the data (include the uncertainty), and from the histogram – b) the y-intercept and c) the slope of the histogram.
- 4) Show results from analyzing the data in one minute intervals. Show a histogram. Compare the  $\tau$  values you get by averaging the CPM data, with uncertainty, of course. Plot a curve of the theoretical pdf on your histogram plot using your estimated value of  $\tau$ .
- 5) Show results from adding up  $N$  arrival times. Again, calculate  $\tau$  with uncertainty from this way of grouping the data. Again, plot a theoretical pdf on your histogram plot.
- 6) Finally write a conclusion about a) The values of  $\tau$  you measured using different techniques, and b) compare the strengths and weaknesses of each technique.

Write your report using the LaTeX sample report in the Document folder as your starting point. ***You must copy this file to another folder before editing it for your report or it may get overwritten!***