Report OSCAR

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1 Thoughts

From the time period of 18th of June to 2nd of September it was collected data for ^{60}Co and ^{152}Eu from the OSC-ARray in the laboratory in the University of Oslo. The detector was shut down in the time period from 28th of June to the 9th of August, so in this time there was not collected data. From looking at the fluctuations in the centroid of the peaks in OSCAR we hope to better understand how OSCAR works and how to calibrate correctly whilst running real experiments. From the plots of the fluctuations one can see that these are indeed big but why this is will be a harder question for me to answer. One theory was temperature, if it dropped or rose would this have an effect on the fluctuations. From the table below one can see the temperature measured during the collection of the data. There has been no significant changes in the temperature whilst collecting these data. I would therefore argue that the temperature seems to not be the reason for the fluctuations. That said there is not all the days where a thermometer was available, but in my opinion there is enough days where the temperature was taken that shows my point. There is one date that has lower temperature than all the others, which is 20.08 but from looking at the plots for this date I can not see any bigger fluctuations, if something it looks more stable around this date. I shared the thermometer with the others down at the cyclotron laboratory and sometimes others needed it more than me, so this is the reason for it not always being measurements in temperatures during the runs. The most significant fluctuations happen after the detector had been turned on again, and for some detectors there are huge fluctuations around the time the chamber was put in place on August the 28th, this is around run number 27 and 28. For detector 11 the peaks 122 keV and 344 fluctuates in the same way and the same goes for the 1172 keV and 1332 keV peaks. This is not the case for all the detectors. For some detectors some centriods fluctuates in the same manner others do not. Nevertheless, almost all the detectors have some big deviations after OSCAR was turned on after the summer, this said, there are some that have big fluctuations before the turnoff in June. Some detector show very little fluctuations and then one big one suddenly, the reason for this might be that I sometimes had to fit the peaks manually. This is a less precise way to fit and therefore some of the fluctuation that one sees in all the plots can be because of manual fitting in general. The

detectors where I had to fit manually every time where detector 5, 29 and 30, but sometimes also 18, 19, 23, 24 and 26.

Date:	Morning	Evening
24.06	21.1 C	21.9 C
25.06	20.4 C	20.4 C
26.06	20.3 C	22 C
12.08	19.8 C	20 C
13.08	20.1 C	20.6 C
14.08	20 C	20.1 C
15.08	20.3 C	20.3 C
20.08	16.5 C	NO
26.08	20.2 C	19.9 C
27.08	19.8 C	NO
28.08	19.8 C	20.1 C
29.08	NO C	19.8 C
30.08	20.2 C	20.2 C
02.09	21.4 C	NO

After running 31 times on the OSCARray