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Upon our arrival at the RCNP on Tuesday this week, we were assigned our experiments and supervisors, as well as toured the cyclotron facility. I was assigned an experiment in Nuclear Physics alongside Jacob Mozdzierz, one of the other RCNP interns.

On Wednesday we got more details on our experiment and began working. I am unofficially referring to the experiment as 'Angle Correlation for Gamma Decay.' In this experiment, we find the angle correlation of gamma decay from an unstable nucleus to give us information about the characteristics of the radionuclide's decay and then information about the spin of the excited nuclear state. This involves starting with a known radionuclide such as Cobalt-60 and then beginning to experiment using other sources such as the accelerator facility. After discussing the experiment, we collected materials. We gathered 5 negatively polarized sodium-iodide scintillators, 2 high voltage power supplies and an oscilloscope. For the remainder of the day, we set up and tested the scintillators to verify that we could get a signal from them and by the end of the day we received literature on gamma decay as well as NaI scintillators.

Thursday we found a similar cobalt-60 experiment to help reference some of the materials we may need and began collecting modules for data acquisition, as well as receiving the computer with the MCA software for our signals from the scintillator. We then designed our experiment using 4 scintillators at different angles to get a handful of unique angles between each of them. We then set up the NIM crate with the high voltage power supply as well as a spectroscopy amplifier for the signal. The scintillators were then tested with the new set up and a signal was read out into the MCA and we compared the information read by the MCA to the signal directly read by the oscilloscope to see if the histogram data directly correlates with the amplitude of the signal.

Friday we continued testing the last few scintillators and began working on getting more familiar with the MCA software. Two scintillators were hooked up and used to get background data which we can use to calibrate the MCA to known gamma ray energies from the surrounding environment. For the future, this calibration will be done using Cobalt-60 gamma radiation for more accurate results, but the background environment is what we are using for now. Plans for Monday include testing more modules to further prepare our signal as well as doing the aforementioned cobalt-60 calibration.