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This week, we had worked mainly on achieving coincidence for our NaI scintillators. Monday we picked up our order for cables and adapters needed to connect all of the scintillators and modules. Using a pulser, we began testing the modules and calculating the modules processing times. We also confirmed the delay for each given length of LEMO cable which we are using. This circuit design splits the signal from the scintillators. One of the split signals goes straight into a shaping amplifier and then into the mca, the other split signal is used to create a gate when in coincidence whenever it is in coincidence with the other scintillators signal. This was created using a Fan In/Fan Out module to split the signal, a timing filter amplifier to amplify the signal, a constant fraction discriminator to process our signal, then a universal coincidence module and gate generator to create our gate.

On Tuesday, we used this gate in the MCA alongside our scintillator signals from the shaping amplifier to collect coincidence data. This was successful but we needed to not only collect the coincidence, but also control what we actually care to collect from the scintillators. For this experiment, we plan to only collect gamma 1 in the fixed scintillator and gamma 2 in the moving scintillator.

Wednesday we confirmed we are seeing the signal we expect, and further refined our circuit. We had gone through iterations with different modules such as attenuators which we realized we did not need.

Thursday we found 2 options for collecting our coincidence data. One is using the 'coincidence mode' built into the MCA. This worked well and collected only the data we were interested in between both detectors and gave us data we think we can work with. This option would not require us to use any of the modules we had been testing but is also more unreliable as we are less sure about the MCA's calculations. The other option is adding a timing SCA to our circuit to collect only specific energies of data. On Thursday we only tested the MCA coincidence mode and on Friday we tested the timing SCA.

For the future of the project; first, beam-time had been scheduled for July 12. Once we finish the pseudo-experiment for angular correlation with cobalt-60, we will use the beamtime to conduct the actual experiment using what we learned from this first experiment. The current plan is to set up using both one Germanium scintillation detector as well as one NaI scintillation detector. Both of these will be set up within a part manufactured to connect to the housing for the target and the scintillators. The beam and target will be helium and gadolinium.