

Michael Sobczak Internship 2005 Personal Report

It's been four weeks now since we started this internship. We've been focused on getting accurate data from our variation on the Muon Lifetime Experiment. We used four scintillator panels which sent signals to the Quarknet DAQ Board. We hardwired outputs from the Quarknet Discriminators. The outputs were run out to a NIM Electronics box for amplification and then run into an FPGA that was programmed by Kunal Arya. The FPGA was set up to run a complex logic process to help detect Muon Decay Times. It waits for a pulse on channel 1 but not 2 3 or 4 then has a series of time out commands designed to filter out as much noise as possible without cutting out good data. If there is a pulse on any of the channels that passes the time out commands then it is counted by the computer as a successful decay.

My job during this project was to be responsible for the software and hardware related to the Quarknet DAQ and the FPGA. I had to learn to use and interact with the Quarknet DAQ through Hyper Terminal. It uses a series of Hexadecimal codes which can get very confusing at times. The FPGA runs much more complex codes and would take a good amount of research to get familiar with the codes. Thankfully, we had Kunal here to help us if we ran into any problems or needed the code changed for us.

I was surprised at the number of friendly, ready to help you however they can people here in the lab. If I had a question I could ask almost anyone and they would either answer or refer me to someone who knew. During this project I have felt like information was being stuffed into me whenever possible. Talking with Terry Shalk, looking over Kunal's shoulder while he worked on the FPGA program, the talks on Cosmology and String Theory, "theorizing" with Grayson about...well we had an opinion on everything. Just walking around the lab was exposed to a lot.

During the project I felt challenged but not overwhelmed and I was able to do much better work than I would normally be capable of at school. I think that I might perform much better at school because of this internship. I am enrolled in Mr. Kliwer's Design Engineering Class where he plans to continue this project. If he does, it means that I will be able to work more with the FPGA and be able to learn and expand the program to do much more complex processes.

This project has helped me get insight into some of the fields I was considering for study and I believe I'm going to focus on computer technology from software to hardware until I find what I want to focus on. I think computers will keep me interested through study and into a possible carrier. I've had experience programming simple software and now that I've been exposed to the FPGA I feel there is a lot more that I can explore and learn with computer technology.