

# Personal Report

By: Jennifer Tighe

The SCIPP Internship was a great experience for me. I learned a lot this summer about experimenting and building equipment. Though I had fun, there were some problems that I had to overcome with my project and with being away from my family. Overall, this internship has been very beneficial to me.

I learned how a scintillator detector works and how to build one. A muon that passes through the detector emits light that is reflected until the photo multiplier tube picks up the signal. The signal then passes through a DAQ board and, in our case, is sent to a computer where the data is ready to be analyzed. My focus this summer was constructing four working scintillator detectors. The basic make-up of a scintillator detector consists of a piece of scintillator plastic, acrylic plastic for the light guide, a photo multiplier tube (PMT), a PMT base, and a PMT mount. Once all these materials are glued together, it's wrapped with reflective material like aluminum and lastly, it's wrapped with electrical tape to make sure that the light isn't able to escape from the muon or pick up artificial lighting.

There were some problems that I had to overcome in the process of this project. The first problem that came up was waiting for materials. It took about a week for the light guides to arrive at the lab. This delayed the continuation of constructing the detector. To solve this problem, I worked on building the power supply box that was needed to run the detector, instead of working on the detector. Another problem that I ran into was the epoxy that we used to glue the PMT mount onto the light guide had a problem sticking, and two out of the four ended up breaking off. Luckily, it wasn't a problem to glue them back on. To prevent this from happening again, supports made out of pieces of wood were taped onto either side of the PMT mount. The last problem was an expected one, light leaks. We tested the scintillator detectors for light leaks and we found that two of them did have light leaks around the PMT. This was fixed by rewrapping the PMTs.

Along with problems at the lab, there was also some difficulty at the dorms. It was difficult to be away from my family and friends. I missed being at home and being able to hang out with my friends. Although it was a problem, I think that it was a good experience and it better prepared me for when I go to college. This internship helped me be familiar with living on my own and taking care of myself.

The SCIPP Internship was a great learning opportunity for me and for other students like me. Experimenting with new equipment that I had never heard of or seen before was one thing that I did this summer. I was able to get a lot of knowledge in the area of experimenting, analyzing and also in other things. In doing this, I also had fun and met new people.