SUMMER JOURNAL

Tuesday, May 26 – First Day
Today was the first day of my research fellowship at the Notre Dame Center for Nano Science and Technology. I was a little bit nervous – I have never done formal research before – but for the most part, I was looking forward to the new experience and to spending the summer back in my hometown.
I arrived at the engineering building early in the morning to meet with one of the program directors and to take care of all of the administrative details. After turning in some of the required paperwork, I spent the next several hours running around campus, visiting human resources and card services and the like, in order to finish up my registration as a visiting summer researcher.
Once that was all taken care of, I met with my research mentor and the two other students in my research group. We went over the project details and tried to figure out who would be working on what over the summer. The theoretical side of the project really fascinated me, and so I spent the remainder of the day reading books and papers and lectures on that aspect of the overall project.
Right now, I am exhausted, but I am excited for the next ten weeks. The people I met were nice; the project I am working on is interesting…I am looking forward to seeing what this summer brings!

Friday, May 29 – First Week
Today was the last day of the first week of my research fellowship. So far, I have been doing lots and lots of reading. My research project, which is about non-boolean computing using spin-wave devices, requires a solid understanding of micromagnetic structures, optical computing algorithms, and spin wave interference, so I need to make sure I understand everything before I dive headfirst into the experiments. My research mentor has been great in helping me learn the material; we have met every day thus far to discuss the project details and also the bigger picture.
Thursday, June 4 – Welcome Luncheon
Today was the official welcome luncheon for all of the research fellows. It was nice to be able to meet other students in the program and to hear what they are working on for the summer. I discovered that many students started their fellowships right after their classes ended, so some are a bit ahead of me with their research, but I am confident that I have enough time to accomplish my goals. I have started playing around with this simulation software called OOMMF (Object Oriented Micromagnetic Framework) and I am hopeful that I will be able to use it to test simple micromagnetic structures in the upcoming days.

Wednesday, July 15 – Coding, Coding, Coding
It has been a while since I last wrote a journal entry; I have been pretty busy with my research. In the past few weeks, I have designed some simple micromagnetic structures, such as a double slit structure and a zone plate structure, and ran simulations with them. The simulations essentially produce spin waves that propagate from the left edge of the material to the right edge of the material, resulting in different spin wave interference patterns, which I then compare to known optics formulas. The end goal is to be able to build analog devices that use spin wave interference patterns to replicate the functions of optical computers. In order to process all of the data from the simulations, I have been writing programs in MATLAB; this has allowed me to sharpen my coding skills and to gain a deeper understanding of the technicalities of the project.

Monday, July 27 – Last Week
Today marked the beginning of the last week of my research fellowship. My main focus for today was my research poster, which will hopefully represent the culmination of ten weeks of hard work. I have already written the abstract, a short summary of my research topic, and now all I need to do is design the poster and figure out how I will present it to others. I found it quite challenging to make sure I included enough information on the poster, while still making it aesthetically pleasing. I am excited for the final product, though, and to present to my peers at the poster session at the end of this week.
Friday, July 31 – Last Day

Today was the last day of my research fellowship at the Notre Dame Center for Nano Science and Technology. I arrived at the science building early in the morning to help set up the posters, as there were going to be over fifty undergraduate researchers presenting at the poster session. The presenters were broken up into two groups, with the first group presenting first and the second group observing first, and likewise, the second group presenting next and the first group observing next. I was assigned to the second group, so I spent the first hour or so walking around and talking to different students and listening to what they had worked on over the summer. It was great being able to interact with other undergraduate researchers and to learn about their research.

When it was my time to present, I stood next to my poster and gave a brief overview of my research topic to people who walked by. Some people asked some really specific questions about my work, which was great to hear, because it showed that they understood what I was trying to do and that they wanted to learn more. The hour flew by and before I knew it, it was time for the closing luncheon. I ate with my research mentor and another member of my research group; it was a nice way to get together one last time before the summer ended and to wrap things up.

Looking back on today, and on the summer as a whole, I realize that I could not be happier with how the research fellowship turned out. I have learned so much over the course of the summer – about the research environment, about effective communication, about overcoming obstacles – and I know that none of this would have been possible without this wonderful opportunity. I am sad that this experience has to end, but I am excited for the new opportunities that this experience will hopefully bring!
Presenting at the concluding poster session.