Introduction

Title: 58th Annual Magnetism and Magnetic Materials Conference (MMM)
Sponsors: The American Institute of Physics (AIP) and the Institute of Electrical and Electronics Engineers
Audience: Members of the international scientific and engineering communities
Location: Colorado
Dates: November 4-8, 2012
Presentation Title: Have a great title name
Presentation Format: Poster

Description/Explanation

The research I am presenting was part of my summer research at North Carolina State University under Dr. X. We focused on work with a computational physics model of a magnetic field at the nanoscale. Typically, a magnetization field always points in one direction; however, a careful balancing of forces can result in localized areas where the magnetization forms spinning droplets called solitons. I used an idealized mathematical model of this phenomenon to observe and classify interactions of multiple solitons. Since magnetic solitons were recently observed experimentally, this work may motivate research into multiple soliton interactions [1]. We had several hypotheses pertaining to post-interaction behavior, particularly related to their magnetization relative to each other. The abstract I submitted to the conference is attached.

In order to present this information, my abstract had to be approved by the conference. There are no undergraduate or graduate sections at this conference, thus my abstract was admitted when compared to abstracts from professionals in academia, industry, or government (a list of conference presenters is available at http://www.magnetism.org/MMM_58th_Program_Web.pdf). This presentation is important to my area of study because I will be sharing original research with experts in the field. This experience will give me opportunities to network with peers and professional scientists, who will be resources as I pursue a graduate degree in applied math. Two of my advisors from this summer are also giving presentations on their research; watching these presentations will give me a new perspective on all of the stages of research, from development to presentation.

I have already given an oral presentation on this research in Knoxville, TN at the Southeastern Atlantic Regional Conference on Differential Equations (SEARCDE). As I continue working for this research group, I will receive feedback from my mentors on my poster design and presentation.

As a result of attending this conference, I hope to gain experience in presenting research to people in my field. I also plan to network with others in the field and visit the University of Colorado-Boulder, which has a graduate program I am interested in.

Reference:

[1] S.M Mohseni, S.R. Sani, J. Persson, T.N. Anh Nguyen, S. Chung, Ye. Pogoryelov, P.K. Muduli, E. Iacocca, A. Eklund, R. K. Dumas, S. Bonetti, A. Deac, M.A. Hoefer, and J. Akerman. Spin torque-generated magnetic droplet solitons. *Science*, 339:1295–1298, March 2013.

Expenses

The expenses associated with this trip are primarily travel expenses. This presentation is part of an ongoing research project at North Carolina State University, and I plan to travel with two other people from NC State. An unspecified amount of funding will be available from NC State to help cover costs not covered through other means. The Meredith College Department of Mathematics and Computer Science will cover the conference registration fee.

Itemized Expenses:

Item	**Estimated by**	**Total Cost**
Hotel	$85/night	$170
Airfare	$200	$200
Transportation	~$15 one-way from airport	$15
Meals	~$30/day for 2 days	$60
Conference Fees	$240 (covered by MC Math/CS Dept.)	$240
Total		$685