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Matthew Kroonblawd '12, Lino Lakes, impresses at international conference

Summary: The physics major has been making waves in international academia while still a junior undergraduate student.

(April 22, 2011)-Matthew Kroonblawd '12, Lino Lakes, has been making waves in international academia while still a junior undergraduate student at University of Minnesota, Morris. A physics major with minors in mathematics and chemistry, Kroonblawd worked since summer 2010 on developing a computer model for the simulations of shock wave propagation in the crystalline explosive RDX. Kroonblawd traveled to Bremen, Germany, with his research adviser, Sylke Boyd, associate professor of physics, and presented his research at an international workshop at the Bremen Institute for Computational Materials Science.

Kroonblawd was initially surprised at being invited to display his work at such a prestigious event. He had no idea such an opportunity would present itself. "Professor Boyd had said from the outset that the project was cutting-edge physics, though I did not understand the methods I was going to be using were only developed in the last three years or so. Undergraduate physics tends to focus on basics, where even the most current methods and models studied in the curriculum are from the 1930s. When Professor Boyd told me we had been invited to Bremen, I understood that I was entering a realm of science completely new and different, and it was both exciting and inspiring!"

The workshop, "Progress and Future Challenges in Computational Materials Science," was held from Monday, March 28 to Wednesday, March 30. The event featured an impressive palette of international collaborators. Invited speakers included leading scientists from Germany, Finland, Italy, Hong Kong, the United States, the United Kingdom, and Austria.

"The workshop was nothing like my preconceptions. The community was vibrant and familiar, with most of the scientists elated not only by my research, but by the opportunity to see old friends," says Kroonblawd. "The people I met ranged from research professors to industrial scientists, and even a fellow who had lived in Minnesota and happened to be a major grant underwriter at the United States Department of Energy (DOE). Everyone was engaging and encouraged me to develop a career in science."

Kroonblawd was especially pleased when Mark Pederson, "the fellow from the DOE," specifically came to see Kroonblawd's poster before his flight back to the United States, and to personally encourage him into a science career. The poster session included 15 posters. Among the graduate students and postdoctoral fellows who presented, Kroonblawd was the only undergraduate student in attendance.

The experience in the workshop has given Kroonblawd the confidence to pursue further education in a doctorate program.

"I knew I wanted to be a scientist from a young age, but it helps to have the encouragement of others who have been where I am now not too many years ago. The workshop has introduced me to the sense of community present in modern

science, not to mention key researchers and scientists themselves. And most importantly, it leaves me wanting to pursue a career in science now more than ever!”

In addition to having his results soon-to-be-published in a major scientific journal, Kroonblawd will also work with Thomas Sewell this summer. An associate professor of chemistry at the University of Missouri, Sewell leads a research group who created the original model that Kroonblawd customized and further developed. Kroonblawd’s project was supported by an Undergraduate Research Opportunities Program grant.

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