

Exit Report

From: Jordan McDonnell

To: David Dean

Re: 8/25/2008 – 9/2/2008 Travel to Tokyo, Japan (CNS-EFES Summer School 2008)

With support from a JUSTIPEN travel grant, I attended the CNS-EFES Summer School for nuclear physics in Tokyo, Japan, at the RIKEN campus and the University of Tokyo. I attended lectures that will prove valuable to my background in nuclear physics, and I presented a poster containing results from a summer research project.

The lectures presented a wide variety of subject matter. The lectures on nuclear theory gave an overview of the use of symmetry in nuclear physics, a presentation on chiral effective field theory, and new advances in shell model and nuclear structure theory. As my main research consists of nuclear structure and nuclear fission calculations, it was very beneficial to hear these reports on the present state of the field at a level intended for an audience of students. The experimental lectures presented an interesting perspective on low-energy nuclear physics and the challenges in interfacing modern equipment with techniques developed in the early years after World War II. The experimental possibilities opened by the RIKEN campus' new RIBF facility were presented, highlighting the new isotopes that can be generated and used in experiments. It was rewarding to tour the new facility and to see the promising state of nuclear physics research in Japan.

The trip also provided the opportunity to present my own work as a poster. I had done a summer project (with W. Nazarewicz, M. Stoitsov, and N. Schunck) on systematically comparing theoretical one-proton quasi-particle excitation energies with experimental band-head energies for rare-earth nuclei (Tb and Ho). My main result was a Python script that automatically generated graphs from input theoretical tables and an experimental database we had compiled (using Berkely National Laboratory's National Nuclear Data Center as a primary resource). The trip was a valuable opportunity to share this work with an international audience.

My attendance at the CNS-EFES Summer School afforded valuable insight into the present state of theoretical and experimental nuclear physics from a perspective accessible to beginning graduate students. The trip was an opportunity to present work on visualizing and analyzing nuclear physics data. The objectives of the travel proposal have been successfully met.