Jason Bane
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Hello,

I am a Ph.D. student at the University of Tennessee with plans to defend late this fall and have been completing my research at the Thomas Jefferson National Accelerator Facility (Jefferson Lab) in Newport News, VA. Completing my research here at the Lab for the last 5 years has allowed me gain an immense amount of experience with detector systems, data acquisition systems, and data analysis. My time at the lab has been devoted to honing my skills and knowledge in the complete process of being an experimental physicist. Working with the three electron scattering experiments has allowed me to experience constructing spectrometers, refurbishing detectors, building electrical systems for data acquisition, and data analysis including monte carlo simulations and the processing of large data sets.

My work at Jefferson Lab has allowed me to work on many aspects of an experiment. I was able to work on the refurbishment and maintenance of a large acceptance electron spectrometer for a tritium experiment. Preparing this spectrometer gave me the opportunity to gain experience in the design and construction of the front end electronics. This included designing and testing of a logic trigger built with analog and digital electronics. I refurbished individual detectors, by testing and replacing photomultiplier tubes and scintillating plastics. I also prepared parts of the analysis software and completed analysis for three different experiments by helping maintain the online analysis software and data decoding scripts. I calibrated parts of the detectors, focusing on the beam position monitors and analog to digital converter signals from the Cherenkov and calorimeters. As part of my Ph.D., I have been analyzing electron scattering data. Part of my analysis task has been to compare data results to simulated data. In order to simulate data, I have had to work closely with cross-section models and monte carlo simulation packages. Completing this analysis has granted me the ability to learn different coding languages like C++, Fortran, ROOT, and python and working with SQL databases

The knowledge and skills I have gained working at Jefferson Lab would make me a great fit to work as a Proton System Commissioning Physicist. My experience with radiation detection systems and data analysis would allow me to deploy and support the operation of the SC360, including analyzing data to improve, maintain, and troubleshoot problems that may arise.

Thank you for your time and attention,
Jason Bane

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Education

- **University of Tennessee** **Knoxville, TN**
  Ph.D. in Nuclear Physics *August 2012 – Planned December 2019*
  Thesis: The EMC Effect in A=3 Nuclei *Advisor: Nadia Fomin*
- **University of Tennessee** **Knoxville, TN**
  Secondary Education Certification in Math and Science *August 2009 – May 2010*
- **University of Tennessee** **Knoxville, TN**
  Bachelor of Science, Physics & Minor in Education *August 2004 – May 2009*

Experience

- **University of Tennessee, Department of Physics and Astronomy** **Knoxville, TN,**
  Graduate Research Assistant *May 2014 – Present*
  - Designed and constructed front end electronics for an electron spectrometer.
  - Used Oscilloscopes to test signals, debug logic modules, and map out inconsistent signals.
  - Maintained and refurbished individual detector components of a spectrometer including checking the quality of Photo Multiplier Tubes and plastic scintillators.
  - Performed analysis on a large set of data involving multiple nuclear targets using Python, C++ , ROOT, and fortran.
  - Worked with a diverse collaboration, leading projects and working as a team member
- **University of Tennessee, Department of Physics and Astronomy** **Knoxville, TN,**
  Graduate Teaching Assistant *August 2012 – May 2015*
  - Designed and implemented observational and planetarium based astronomy labs.
  - Instructed students in laboratory exercises to help conceptualize physics topics.
- **Clay County Tennessee Education Department** **Celina, TN**
  Secondary Educator & Football Coach *August 2010 – May 2012*
  - Created lesson plans that included interactive, creative thinking, and discussion driven curriculum for a diverse body of math and physics students.
  - Provided an equitable and inclusive atmosphere for diverse students.

Core Technical Skills

Hardware: Detector maintenance and wiring, front end electronics design and implementation, logical trigger design and testing
Languages: C, C++, LaTeX, Python, shell script, SQL
Monte Carlo Simulation Packages
Example scripts located at https://github.com/jbane11/examples
Software: Microsoft Office, Libre Office, Texstudio, vim, atom
Operating Systems: Linux(Red Hat), Windows, MacOS