

Jonathan Michael Mueller



Graduate Institution: Duke University

Graduate Discipline: Nuclear Physics

Hometown: Sudbury, MA

Relevant SC Research: Nuclear Physics

Research Interest:

My primary research focus is investigating photoneutron angular distributions and their potential applications to distinguishing fissile (eg U-235), fissionable (eg U-238), and non-fissionable (eg Fe) material. This work involves measuring and understanding (gamma, n) angular distributions and prompt neutron angular distributions from the (gamma, fission) reaction. Recent results from my studies show that, by using linearly polarized gamma-ray beams of approximately 6 MeV, one can distinguish fissile, fissionable, and non-fissionable materials by measuring the outgoing neutron yield and polarization asymmetry. Other research interests include novel measurements of the Iso-Vector Giant Quadrupole Resonance in nuclei, precise measurements of the static electric and magnetic polarizabilities of the neutron, a potential fusion reactor based on the B-11 (p, alpha) reaction, and correlations and spectroscopic factors of Calcium isotopes as one approaches the neutron drip line.

About Me:

I grew up in Sudbury, Massachusetts and attended Lincoln-Sudbury Regional High School. My passion for mathematics in high school drove me to attend night classes at Harvard. After graduating high school, I moved to St. Louis to attend Washington University. There I majored in Physics, Mathematics, and Economics and was awarded a Greg Delos Fellowship

and an Antoinette Frances Dames Award. I spent three years there as an undergraduate research assistant working with nuclear physicists on many-body theory and phenomenology. I graduated in 2009 as a Valedictorian and received the Senior Prize in Physics.

After graduating from Washington University, I enrolled at Duke University for a PhD in experimental nuclear physics and was awarded a James B. Duke Fellowship. I am currently working with the Capture group led by Henry Weller and Mohammad Ahmed. In my three years here, I have learned much about experimental nuclear physics and completed most of the experiments that will comprise my thesis. I plan to graduate sometime in the fall of 2013.

Outside of my graduate work, I enjoy participating in many of Duke's extracurricular activities. In particular, I serve as the Community Service Chair for Duke's annual graduate student campout for season tickets to Duke's men's basketball home games. I contact local non-profits and organize community service activities for the graduate students who camp out. Typically we provide 500-700 volunteers for the community during the camp out.

In my spare time, I enjoy spending time with my fiancée Sarah Frazier, who is a MSTP student at Duke. I also like to learn about physics and programming, and watch a variety of sports including basketball and football. I enjoy playing basketball, racquetball, and ultimate Frisbee.



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