

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 (γ , n) angular distributions and prompt neutron angular distributions from the (γ , 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, α) 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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