

# Daniel Shy

**Languages:** English, Hebrew, and German  
**Contact:** danielshy@danielshy.com

## Education:

2015-Present: University of Michigan, PhD Candidate, Nuclear Science

Advisor: Dr. Zhong He

Passed PhD Qualifying Exam (January 22, 2016)

Passed PhD Prospectus Exam (February 7, 2019)

2015: University of Massachusetts-Amherst, Commonwealth Honors College

Bachelor of Science in Physics *cum laude* with Departmental Honors

Honors Thesis: *Construction of a Xenon Purification and Liquefaction System for nEXO*

Advisor: Dr. Andrea Pocar

## Current Activities:

2015-Present: Research Assistant to Prof. Zhong He, Orion Radiation Measurement Group

## Past Activities:

2016-2019: Volunteer Mentor, Service Learning and Trans-disciplinary Education, Ann Arbor, MI

Spring 2019: Graduate Student Instructor: NERS-315/515: Nuclear Instrumentation Laboratory

Winter 2018: Instructional Aid in NERS-312: Elements of Nuclear Engineering and Radiological Sciences II

Summer 2015: Idaho National Laboratory intern to Dr. Scott Thompson, Nuclear Nonproliferation

2012-2015: Research Assistant to Prof. Andrea Pocar, EXO Collaboration (UMass Amherst)

Summer 2014: Idaho National Laboratory intern to Dr. Scott Thompson, Nuclear Nonproliferation

Summer 2013: Star Formation research under Dr. Mark Heyer, UMass Amherst

2009-2011: Museum of Science, Boston, MA, Exhibit Hall Interpreter (accumulated 175 hours)

## Other skills:

**Computer:** GEANT4, C++ , MatLab, ROOT, SolidWorks, IDL, Mathematica, Some LabView

**Technical:** Vacuum systems, Radiation Worker II (INL), Cleanrooms, Cryogenics, Machining

**Violin:** (12 Years) Musikschule Charlottenburg, Berlin and Michigan Youth Orchestra

**Flight:** 16 Hours actual dual flight time in airplane (PA-28) and helicopter (R44) in addition to several hours of ground school.

**Skydiving Training:** Completed skydiving course and first solo jump on September 3, 2011

**Motorcycle License:** Completed Streetwise Motorcycle School training on August 8, 2012

**Services:** President of Dept. Graduate Student Council, Reviewer for NIMA, Emergency Response Team Member (UM-NEL), Committee Chair of NERS Student Recruitment Visit Weekend, Session Co-chair for Engineering Graduate Symposium, SLATE Volunteer Mentor, Department Safety Committee Member

## Awards:

- University of Massachusetts, Amherst
  - Departmental Honors and Dean's List (All Semesters)
  - Honors Research Grant and Research Assistant Fellowship
  - Massachusetts Space Grant Consortium Undergraduate Fellowship (NASA/MIT)
- Harvard University Extension School Lowell Scholarship: Fall 2011, Spring 2012

### **Publications:**

**Daniel Shy**, Zhuo Chen, Yuefeng Zhu, Scott Thompson, and Zhong He. "Imaging of Gamma-Ray Sources in 3D using Time Encoded Imaging and the OrionUM Pixelated CdZnTe with Subpixel Position Estimation" (In preparation for IEEE TNS, early 2020).

**Daniel Shy**, Brenden Huhlein, Scott Thompson, and Zhong He. "3D Gamma-Ray Imaging Using Pixelated CdZnTe and a Personal Odometry Unit" (Submitted December 2019 to NIMA).

**Daniel Shy**, Jiawei Xia, and Zhong He. "Artifacts in High Energy Gamma-Ray Imaging Using 3D Position Sensitive CdZnTe" (Submitted November 2018 to IEEE TNS).

**Daniel Shy** and Zhong He. "Gamma-Ray Tracking for High Energy Gamma-ray Imaging in Pixelated CdZnTe." Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2018, ISSN 0168-9002, <https://doi.org/10.1016/j.nima.2018.10.121>

Michael S. Lee, **Daniel Shy**, Red Whittaker, and Nathan Michael. "Active Range and Bearing-based Radiation Source Localization." 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IEEE-IROS)

### **Non-Peer reviewed:**

**Daniel Shy** and Zhong He. "3D Compton Imaging by Use of Stereophotogrammetry and Pixelated CdZnT." In 2017 IEEE Nuclear Science Symposium and Medical Imaging Conference, Nov. 2018

**Daniel Shy** and Scott Thompson. 2014. "A parameter study to optimizing scintillator characteristics for increased sensitivity in nuclear nonproliferation, safeguards, and security based applications." U.S. Department of Energy Office of Scientific and Technical Information.

### **Presentations and Conferences:**

2017 IEEE NSS-MIC Conference, Manchester, United Kingdom

2018 IEEE NSS-MIC Conference, Sydney, Australia

2018 CVT Workshop, University of Michigan - Ann Arbor

2018 Engineering Graduate Symposium, University of Michigan - Ann Arbor

2018 Symposium on Radiation Measurements and Applications (2018 SORMA XVII)

2017 IEEE NSS-MIC Conference, Atlanta, Georgia

INMM Regional Conference Presentation, PNNL, August 1, 2014

The 20th and 21st Annual Undergraduate Research Conference, Amherst, MA, 2013, 2014

### **Services and Outreach:**

Reviewer for Nuclear Instruments and Methods in Physics Research Section A, Journal of Visualized Experiments

Emergency Response Team Member, Nuclear Engineering Laboratory, University of Michigan-Ann Arbor 2017-

Mentor at SLATE Community Action Network, Washtenaw County, Ann Arbor, MI 2017-2019

President, Graduate Student Council, NERS Department, University of Michigan-Ann Arbor 2017-2019

Committee Co-Chair of NERS Student Recruitment Visit Weekend, 2017, 2018

Session Co-Chair, Engineering Graduate Symposium, University of Michigan-Ann Arbor 2016