

# AARON BRADLEY NOWACK

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## EDUCATION

University of Tennessee, Knoxville

**Ph.D. Nuclear Engineering**

**2014 - Present**

University of California, Davis

**B.S. Physics**

**2011**

## PROFESSIONAL EXPERIENCE

**Graduate Research Assistant, advisor Dr. Jason Hayward**

**University of Tennessee, Knoxville & Oak Ridge National Laboratory**

**2014 - Present**

Thesis Topic: Enrichment and Multiplication Estimation of Shielded Uranium Assemblies Under Active Interrogation Using Inverse Methods

- Development of analytic theory incorporating statistics of fast neutron induced fission chains into an imaging algorithm in support of neutron imaging systems at ORNL
- Developed open source package, CTPy, for modeling computational tomography measurements, analytic and iterative reconstruction methods in 2D and 3D

**R&D Laboratory Support Technologist**

**LMATA Government Services at SANDIA NATIONAL LABORATORIES**

**2011 - 2014**

- Setup and performed experiments for measuring performance of new technologies in neutron based nuclear materials detection and imaging
- Developed software for data acquisition and analysis of signal digitizers, sensors, calibration measurements, and imaging methods
- Evaluated performance of detector designs using optical and radiative transport simulations

**Undergraduate Research Assistant, advisor Dr. Mani Tripathi**

**University of California, Davis**

**2010 - 2011**

- Performed data analysis of proton collision events taken by the Compact Muon Solenoid of the Large Hadron Collider in search of monophoton events
- Merged analysis into main branch for reduction of beam halo muon background events
- Taught programming and physics to group of high school students using proton collision data

## PUBLICATIONS

J. Brennan, E. Brubaker, M. Gerling, P. Marleau, M. Monterial, [A. Nowack](#), P. Schuster, B. Sturm, M. Sweany (2018). Source detection at 100 meter standoff with a time-encoded imaging system. Nuclear Instruments and Methods in Physics Research Section A. 877:375-383

J. Brennan, E. Brubaker, M. Gerling, P. Marleau, K. McMillan, [A. Nowack](#), N. Renard-LeGalloudec, M. Sweany (2015). Demonstration of two-dimensional time-encoded imaging of fast neutrons. Nuclear Instruments and Methods in Physics Research Section A. 802:76-81

## PRESENTATIONS

[A. Nowack](#), J. Hayward, S. McConchie. Imaging of Shielded Uranium Assemblies Under Active Neutron Interrogation Using Inverse Methods. Poster presentation delivered at American Nuclear Society Mathematics & Computational Methods meeting, Jeju, Korea, April 2017 [https://www.kns.org/files/int\\_paper/paper/MC2017\\_2017\\_12/P404S13-01NowackA.pdf](https://www.kns.org/files/int_paper/paper/MC2017_2017_12/P404S13-01NowackA.pdf)

[A. Nowack](#), J. Brennan, E. Brubaker, M. Gerling, P. Marleau, K. McMillan, P. Schuster, J. Steele. Fast Neutron Time Encoded Imaging for Special Nuclear Material Detection. Oral presentation delivered at 53<sup>rd</sup> meeting of the Institute of Nuclear Materials Management, Orlando, Florida 2012 <https://resources.inmm.org/annual-meeting-proceedings/fast-neutron-time-encoding-imaging-special-nuclear-material-detection>

## TECHNICAL REPORTS

E. Brubaker, J. Brennan, P. Marleau, [A. Nowack](#), J. Steele, M. Sweany, D. Throckmorton, "Bubble masks for time-encoded imaging of fast neutrons", SAND2013-7921. <http://www.osti.gov/scitech/biblio/1096263>

## RELEVANT SKILLS

C, C++, Python, NVIDIA-CUDA, Geant4, ROOT, MCNP