

James A. Walker
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Education

University of California, Irvine (July 2012 – March 2016)

- Masters Physics
- High energy neutrino research (see below)

University of North Carolina at Chapel Hill (UNC-CH) (August 2010 – May 2012)

- BS Physics
- Society of Physics Students Tutor

North Carolina Central University (August 2008 – May 2010)

- BS Physics (Freshman through Sophomore years)
- Tutored high school students how to solve problems in mechanics, E&M, and modern physics for science competition
- NC Space Grant sophomore scholarship
- Phi Eta Sigma national honors society
- Golden Key national honors society

Past Research and experience

UCI July 2012 – October 2016 with the ARIANNA project

- 40+ hours/week
- Developed data analysis for the incoming data from the detector site and used the HPC cluster to process large datasets
- built full physics to detector simulations from basic equations and models using C++ and python
- Tested, recorded data, and fixed issues with many hardware elements of the ARIANNA detectors including DAQ boards, amplifiers, custom-made shielding boxes, and batteries
- Calibrated DAQ boards and amplifiers used for the detector

UNC-Chapel Hill Fall 2011-Spring 2012 for Phys 395 (Independent Research) and 482L (Advanced Laboratory II)

- 6-10 hours/week
- Worked under Dr. Reyco Henning on the Majorana experiment
- Used monte-carlo techniques and numerical calculations to determine the distance distributions of neutrinos passing through the Majorana demonstrator originating from a source placed outside the detector
- Assembled and tested a high vacuum system for the Majorana demonstrator

Hampton Univ. UniPhy REU program at Jefferson Nation Accelerator Facility and MIT summer 2011

- 40 hours/week
- Worked under Dr. Rolf Ent and Dr. Tanja Horn on the Electron-Ion Collider (EIC)
- Built GEANT4 models of electromagnetic calorimeters for use in optimizing the central

- detector design for an EIC
- Built the models so that they could be easily modified to fit with the other parts of the detector
- so that a complete detector model could be built
- Gave a ten minute oral presentation at the end of the summer and submitted a paper to the program directors
- Attended the 2011 Particle and Nuclear International Conference at MIT
- Presented a poster (CEU) at DNP meeting at MSU in Oct 2011

Duke Univ./TUNL summer 2010 - spring 2011

- 40 hours/week during the summer
- Worked under Dr. Hugon Karwowski (UNC-CH) in the photofission group
- Used previous experience with GEANT4 to simulate multiple scattering backgrounds in a neutron detector array
- Tested GEANT4 cross section libraries
- Gave a ten minute oral presentation at the end of the summer
- Contributed a section to the TUNL progress report
- Presented a poster (As part of the CEU program) at the DNP meeting in Santa Fe, NM in Nov 2010

Duke Univ./TUNL summer 2009

- 40 hours/week
- Worked under Dr. Kate Scholberg (Duke Univ.) on CLEAR proposal
- Learned to use ROOT and GEANT4.
- Implemented, tested, and troubleshot simulation package (RAT) based on GEANT4 for use in optimization of the CLEAR detector
- Gave a ten minute oral presentation at the end of the summer

Publications

S. W. Barwick et. al., A first search for cosmogenic neutrinos with the ARIANNA Hexagonal Radio Array, *Astroparticle Physics*, Volume 70, October 2015, Pages 12-26, ISSN 0927-6505, <http://dx.doi.org/10.1016/j.astropartphys.2015.04.002>. (<http://www.sciencedirect.com/science/article/pii/S0927650515000638>)

S. W. Barwick et. al. Radar Absorption, Basal Reflection, Thickness, and Polarization Measurements from the Ross Ice Shelf eprint arXiv:1410.7134

S. W. Barwick et. al. Design and Performance of the ARIANNA Hexagonal Radio Array Systems eprint arXiv:1410.7369

Systematically Searching for New Resonances at the Energy Frontier using Topological Models - Abdullah, Mohammad *et al.* *Phys.Rev. D*89 (2014) no.9, 095002 arXiv:1401.1462 [hep-ph] FERMILAB-PUB-13-529-T

Technical Proficiency

General: Word processing, Excel, LaTeX

Programming: C++, Python, Matlab

Computation and data presentation: ROOT, Matlab, Cluster computing