ANDREW WATSON

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PROFILE Experienced Java / C++ programmer with a Ph.D. in physics, looking for a software development or computational research position with advancement potential.

EXPERIENCE

Software Developer | 08.2016 – Present
National Institute for Bioprocessing Research and Training (NIBRT), Dublin, Ireland
Writing a Java / Scala-based analysis and visualisation framework from scratch. Responsible for installing and managing a small Apache Hadoop cluster integrated with Apache Spark.

Adjunct Professor | 01.2015 – Present
La Salle University, Philadelphia, PA, USA, and Rowan University, Glassboro, NJ, USA
Lecturer for in-person and online general physics, astrophysics, and astronomy classes. Currently teaching only online introductory astronomy at Rowan University.

Research Assistant | 08.2012 – 05.2017
Temple University, Philadelphia, PA, USA

DarkSide Collaboration (direct dark matter search)
Transverse position reconstruction of events, using Principal Component Analysis; wrote original optical simulation / ray-tracing algorithm for prototype detector; data analysis

Argon Response Ionization and Scintillation (ARIS) Experiment
Created novel pulse-finding algorithm for waveform data; software development; extensive use of PostgreSQL and CERN's geant4 C++ toolkit; data analysis

Scintillation Efficiency of Noble Elements (SCENE) Collaboration
Monitored experiment; data analysis using C++ and CERN's ROOT framework

SKILLS

Proficient | 4+ years' experience
C/C++; bash/shell scripting; data analysis; LaTeX; HTML/CSS; JavaScript; Mac OS; Windows; Ubuntu; Microsoft Office; Adobe Flash, Dreamweaver; CERN's ROOT framework

Intermediate | 1 – 4 years' experience
git versioning system; HPC/PBS; PostgreSQL; PHP; Java; Perl; CERN's geant4 toolkit

Beginner | < 1 year of experience
Scala; MATLAB; R; Python; Apache Spark, Hadoop, Maven; Javadoc; Scaladoc; sbt

EDUCATION

Temple University, Philadelphia, PA, USA | 08.2012 – 05.2017
Doctor of Philosophy, Physics | degree conferred May 2017
Master of Science, Physics | degree conferred August 2014

Moravian College, Bethlehem, PA, USA | 08.2008 – 05.2012
Bachelor of Science, Physics & Mathematics with Honors (cum laude)

OUTREACH

Start Talking Science | 12.2013 – 05.2017
Co-founded by others and myself in December 2013, Start Talking Science is an annual event where STEM researchers present non-technical posters to the community. I was involved in all aspects of the conference, including logistics; fundraising; and web, print, and graphic design.

The Franklin Institute | 11.2012 – 06.2014
The Franklin Institute is an interactive science museum in Philadelphia. I volunteered here, explaining scientific concepts like buoyancy and electricity to children and their parents.

SELECTED PUBLICATIONS & PRESENTATIONS

Measurement of the Liquid Argon Energy Response to Nuclear and Electronic…
P. Agnes, A. W. Watson, et al. | 20.01.2018 | arXiv

CALIS – a CALibration Insertion System for the DarkSide-50 Dark Matter Search…
The DarkSide Collaboration | 18.12.2017 | Journal of Instrumentation

Simulation of Argon Response and Light Detection in the DarkSide-50 Dual Phase TPC
The DarkSide Collaboration | 23.10.2017 | Journal of Instrumentation

Transverse Position Reconstruction in a Liquid Argon Time Projection Chamber using Principal Component Analysis and Multi-Dimensional Fitting
Andrew William Watson, Ph.D. Thesis | 08.2017 | ProQuest

Effect of Low Electric Fields on Alpha Scintillation Light Yield in Liquid Argon
The DarkSide Collaboration | 24.01.2017 | Journal of Instrumentation

The Electronics and Data Acquisition System for the DarkSide-50 Veto Detectors
The DarkSide Collaboration | 12.12.2016 | Journal of Instrumentation

The Past, Present, and Future of Dark Matter
Andrew William Watson, seminar | 28.10.2016 | Dublin Institute for Advanced Studies

DarkSide in 10 Minutes
Andrew William Watson, presentation | 14.06.2016 | Fermilab's New Perspectives 2016

Results from the First Use of Low Radioactivity Argon in a Dark Matter Search
The DarkSide Collaboration | 08.04.2016 | Physical Review D

Measurement of Scintillation and Ionization Yield and Scintillation Pulse Shape…
The SCENE Collaboration | 26.05.2015 | Physical Review D

First Results from the DarkSide-50 Dark Matter Experiment at Laboratori Nazionali…
The DarkSide Collaboration | 09.04.2015 | Physical Letters B

The DarkSide Multiton Detector for the Direct Dark Matter Search
The DarkSide Collaboration | 19.06.2014 | Advances in High Energy Physics

Observation of the Dependence on Drift Field of Scintillation from Nuclear Recoils…
The SCENE Collaboration | 26.11.2013 | Physical Review D

On the Unfoldability of Prisms
Andrew William Watson, Undergraduate Thesis | 05.2012 | Moravian College Reeves Library

MEMBERSHIPS AND AWARDS

Memberships
Sigma Pi Sigma, national physics honour society
Pi Mu Epsilon, national mathematics honour society
Phi Sigma Tau, national philosophy honour society
MENSA, international high IQ society
American Institute of Physics (AIP)
American Astronomical Society (AAS)

Awards
Ph.D. Dissertation Completion Grant | Temple University
John H. Clewell Science Scholarship | Moravian College
Marlyn A. Rader Memorial Prize in Mathematics | Moravian College