William K. DiClemente

CONTACT INFORMATION
will.diclemente@gmail.com
(414) 617-2645

CURRENT ADDRESS
3200 Summer St. Unit 5
Philadelphia, PA 19104

PROFESSIONAL SUMMARY

I recently received my PhD in experimental particle physics, and I am seeking employment in the data science or tech industries. I have nearly 10 years of research experience with the ATLAS experiment at CERN's Large Hadron Collider, during which I have learned how to write my own software as well as use existing frameworks to analyze large volumes of particle collision data. I really enjoy the problem-solving aspect of taking a huge amount of information and extracting something useful from it.

EDUCATION

University of Pennsylvania, Philadelphia, PA
Doctor of Philosophy, Physics (Experimental Particle Physics), May 2019
Masters of Science, Physics, May 2015

Duke University, Durham, NC
Bachelor of Science, Physics (High Distinction), May 2013
Minors, Mathematics, May 2013

TECHNICAL SKILLS

Programming Languages: C++, Python
Data Analysis Frameworks: ROOT, PyROOT
Familiar: Unix-based OS, LaTeX, MySQL, Git, Java, Matlab, Fortran

RESEARCH EXPERIENCE

ATLAS Experiment (CERN) — University of Pennsylvania, Philadelphia, PA — 2014-2019
Particle physics researcher

Duke University, Durham, NC — 2010-2013

ATLAS is one of the particle detector experiments at CERN's Large Hadron Collider (LHC) in Geneva, Switzerland. It is one of the largest scientific collaborations ever, consisting of over 3000 scientists stationed around the world and on-site at CERN. Projects typically are collaborative with a team of scientists working in parallel to complete the study. Research involves using ATLAS's data analysis framework as well as writing personal or project-specific analysis software to process the large volumes of data collected by the detector.

Nearly 10 years of research experience including physics measurements and detector performance studies.

- *Physics analysis* (2011-2013, 2015-2019): Analysis of LHC collision data to identify and measure particle interactions, such as electroweak boson scattering, and compare to theoretical predictions. Wrote analysis software to select candidate signal events passing specific criteria and compare to simulated data and models of relevant background processes in order to measure the physics process of interest. PhD thesis highlights: modeling of the non-prompt lepton background—one that is difficult to accurately predict via Monte Carlo simulations—and optimization of the signal event selection using a modified grid scan technique.
- *Detector performance* (2014-2019): High measurement accuracy is essential for precise physics measurements and is maintained through studies of ATLAS's performance. Worked with a team to correct physical movements of detector sensors that can occur during normal operation by deriving and applying software-level corrections to the data.

TEACHING EXPERIENCE

Physics Lab — University of Pennsylvania — 2013-2014
Teaching Assistant — Philadelphia, PA

Taught the laboratory component of the undergraduate introductory physics courses for classical mechanics and electricity and magnetism across three semesters. Responsibilities included lab demos and guidance, teaching necessary content if not covered in lecture, and lab report grading.

CONFERENCE PRESENTATIONS

Measurement of same-sign WW diboson production at 13 *TeV with the ATLAS detector.* Meeting of the American Physical Society Division of Particles and Fields. Fermi National Accelerator Laboratory, Batavia, Illinois. July 31-August 4, 2017.

Alignment of the ATLAS Inner Detector in the LHC Run II. Poster presentation. XXVII International Symposium on Lepton Photon Interactions at High Energies. Ljubljana Exhibition and Convention Centre, Slovenia. August 17-22, 2015.

Searches for New Physics Using $W\gamma$ Production at the LHC. American Physical Society April Meeting. Denver, Colorado. April 14, 2013.

Search for Quartic Couplings in the $p+p \to W(\mu\nu)+\gamma\gamma$ Channel. Poster presentation. US ATLAS Annual Physics Workshop. University of Michigan, Ann Arbor, Michigan. August 14, 2012.

DISSERTATION

Measurement of Electroweak Production of Same-Sign W Boson Pairs with ATLAS. PhD thesis, May, 2019. `http://cds.cern.ch/record/2674035`. Presented 21 Feb, 2019.

SELECTED PUBLICATIONS

ATLAS Collaboration, *Observation of electroweak production of a same-sign WW boson pair in association with two jets in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector.* Submitted to Phys. Rev. Lett. June 2019. `arXiv`:1906.03203 [hep-ex].

ATLAS Collaboration, *Prospects for the measurement of the $W^{\pm}W^{\pm}$ scattering cross section and extraction of the longitudinal scattering component in pp collisions at the High-Luminosity LHC with the ATLAS experiment.* CERN, Geneva, Dec, 2018. `http://cds.cern.ch/record/2652447`.

ATLAS Collaboration, *Measurement of the $W^{\pm}Z$ boson pair-production cross section in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector.* Phys. Lett. **B**762 (2016) 1-22, `arXiv`:1606.04017 [hep-ex].

HOBBIES & INTERESTS

Played cello for nearly twenty years, was a member of the local youth orchestra in high school and the university orchestra in college.

Participated in a variety of intramural sports in college and graduate school including flag football, basketball, and ultimate frisbee.

Hosted and provided commentary for a number of speedrunning tournaments on Twitch for the game The Binding of Isaac as well as participating myself.