William K. DiClemente, PhD

wdic@sas.upenn.edu
(414) 617-2645
LinkedIn: bit.ly/2lzZi0U

EDUCATION

University of Pennsylvania, Philadelphia, PA
PhD, 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

Proficient in C++, Python, ROOT/PyROOT (Data analyis framework)
Experienced in Unix-based OS, LaTeX, MySQL, Bash, Git, Java

RESEARCH EXPERIENCE

Particle Physics Research with the ATLAS Experiment at CERN
University of Pennsylvania (2014-2019)/Duke University (2010-2013)

As a physics researcher, I used a combination of C++ and Python software including ROOT, experiment-wide frameworks, and personal analysis-specific software to read, analyze, and visualize terabytes of real and simulated ATLAS data. My research was highly collaborative; our analysis teams would regularly report progress with parent groups, interact with experts on detector performance, and consult with theorists for additional ideas and models to test.

Research highlights include:

- Played a leading role in the development of an updated technique for modeling troublesome background processes in a high-profile physics analysis.
- Slimmed and skimmed many-terabyte datasets into smaller, analysis-specific samples for several different analyses.
- Optimized an analysis's signal selection using a random grid search algorithm, improving the significance by nearly 60%.
- Introduced a new set of 2D cuts to an analysis which reduced a major background by 20%.
- Monitored detector performance for possible biases in data reconstruction using 2D maps built from fits to distributions of various measured quantities.
- Analysis work resulted in 4 papers, as well as being a contributing author on over 100 additional ATLAS publications.

TEACHING EXPERIENCE

Introductory Physics Laboratory Teaching Assistant
University of Pennsylvania (2014-2015)

Taught three semesters of classical mechanics and electricity and magnetism labs. Responsibilities included demonstrating lab techniques, guiding students through their exercises, teaching supplemental material, and grading lab reports.