William K. DiClemente

CONTACT INFORMATION
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CURRENT ADDRESS
3200 Summer St. Unit 5
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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

Proficient: C++, Python, ROOT/PyROOT (Data analyis framework)
Familiar: Unix-based OS, LaTeX, Git, Java, MySQL, Matlab, Fortran

RESEARCH EXPERIENCE

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

Duke University, Durham, NC — 2010-2013

Measured same-sign W boson scattering cross section with 2015-2016 ATLAS data. Modified existing method for modeling background contribution from fake leptons to achieve better data-simulation agreement. Developed new method for reducing 3-lepton backgrounds via 2D cuts, tests showed up to 20% additional background rejection. Analyzed prospects for same analysis at future HL-LHC collider. Increased signal significance by nearly 60% by optimizing selection using a random grid search algorithm, and corrected overpredicted top quark backgrounds by implementing an analogue for a particle isolation requirement missing from the simulation. Corrected for misaligned detector sensors by applying corrections during data reconstruction derived using a global χ^2 minimization of track-hit residuals from millions of particle tracks.

SELECTED PUBLICATIONS

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

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].