David Bjergaard

Physicist • Educator • Student

Duke University Department of Physics
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Work Experience

Duke University

2011-2017

Developed code and coauthored 2012 report of the state of the art in Monte Carlo simulation of jet substructure variables

Measured jet charge in W+jets events using ATLAS data

Restructured scheduling of realistic simulation of time-dependent pileup in Monte Carlo (RunDMC) to make job completion time five times more predictable.

Johns Hopkins

2008-2011

Developed software tools to aid in understanding early data recorded by the Compact Muon Solenoid experiment

Feasibility studies of measuring an undiscovered heavy particle decaying to two

Education

Degree Ph.D in Physics
Advisor Ayana Arce
Thesis "Probing QCD Bound states with jet substructure in the charmonium system"

Degree Bachelors of Science, Honors
Advisor Petar Maksimovic

Publications

A. Altheimer et al., *Boosted objects and jet substructure at the LHC*, Nov 12, 2013. Eur. Phys. J. **C74** (2014) 2792

Arce, A; Bjergaard, D; Nachman, B; Schwartzman, A; Swiatlowski, M. *A Measurement of the Jet Charge in ATLAS*, June 08, 2013. ATL-COM-PHYS-2013-729

Phillips, R; Beeri, O; Scholljegerdes, E; Bjergaard, D; Hendrickson, J; *Integration of geospatial*

Skills

Computing

C++, C, Python, Lisp, Ruby, HTML
Linux
Managing Open Source projects

Research

Statistical Data Analysis
De-convolution methods
High Performance Computing

Awards

2010 Provost Undergraduate Research Award for Z' Searches at the LHC, $2500, Johns Hopkins University
2011 ΣΡΣ Inductee awarded to top 10% of Physics Majors at Johns Hopkins University
2015 Marie Curie Early Stage Researcher Fellowship

Mentoring

2013 Mentored Scott Leiberman, TUNL REU student
2014 Mentored Max Krackow, TUNL REU student
2009 North Dakota Governor's School Counselor
2008 North Dakota Governor's School Counselor

Outreach

2012 and 2013 Adopt-a-Physicist Fall
2014 Physics Demonstrations
2013, 2014, and 2016 CERN Masterclass
2013 USATLAS trip to Washington DC to raise awareness of HEP research

Software

Hitchhiker's Guide to High Energy Physics Documentation and Example code for new students
Rivet Charmonium Studies Rivet is a software framework for studying Monte Carlo generators, this is code for creating plots of substructure variables in charmonium events.
Rivet Jet Charge Studies Rivet code for BOOST 2012 analysis, (including Condor steering infrastructure)
Stump Window Manager Maintainer/Developer, A window manager written in Common Lisp