MichaelSavastio

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summary

PhD in high energy theory with strong statistical, probabilistic and physics-related skills looking for opportunities in data science.

contact

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programming

C++
Python
SQL
C#
Fortran
LaTeX
Linux Shell Scripting

quantitative skills Data modeling and analysis, statistics and probability theory, likelihood fitting and analysis, regressions (linear, non-linear, logistic, least-squares), hypothesis testing, optimization (gradient methods, non-gradient: simplex, metaheuristic and evolutionary methods), Monte Carlo methods (simulations, stochastic integration), mathematical modeling, machine learning (neural networks)

experience

2014-2015 **Brookhaven National Lab & Cornell University (Fellowship)** High Energy Theory

- Developed general methods for optimizing binned likelihood fitting techniques for extracting Standard Model parameters from heavy meson decays using non-gradient metaheuristic numerical methods to search a high-dimensional parameter space, developed using C++, using ROOT data analysis library for data visualization.

2012-2014 **Cornell University** High Energy Theory

- Developed a procedure for eliminating theoretical error from methods for extracting certain Standard Model parameters from experimental data.
- Used experimental data to place constraints on new physics models.
- Developed software for calculating probability distribution functions of a certain class of new physics events.

2012 **Cornell University (CMS)** High Energy Experiment

- Analyzed large LHC data sets and Monte Carlo simulated data to develop methods to extract new physics events by applying data filtration, regression and hypothesis testing techniques, using C++, Python and ROOT data analysis package.

2008-2011 **Brookhaven National Lab (eRHIC)** High Energy Experiment

- Created a C++ software library for efficiently applying detector bias to Monte Carlo generated data.
- Created Monte Carlo software for data modeling of physics events.
- Helped to plan eRHIC detector geometry using Monte Carlo techniques.
- Tested silicon vertex detectors for PHENIX upgrade.

education

May 2015 **Ph.D. Physics** Cornell University
Specializing in High Energy Theory
GPA: 3.9/4.3

Aug 2013 **M.S. Physics** Cornell University
GPA: 3.9/4.3

May 2010 **B.S. Physics** Stony Brook University
Major GPA: 3.9/4.0
Overall GPA: 3.7/4.0

May 2010 **B.S. Mathematics** Stony Brook University
(concurrently with B.S. Physics)
Major GPA: 3.8/4.0

teaching

2010-2014 **Cornell University** TA

Taught recitation and labs for students of a variety of backgrounds (physics graduate students, physics undergraduates, engineering students, pre-med and humanities students) subjects including electrodynamics, quantum mechanics, special relativity and classical mechanics. This helped me develop excellent communication skills for technical subjects.

publications

- "Effects of $K^0 - \overline{K}^0$ mixing on determining γ from $B^\pm \to DK^\pm$"
  JHEP 1403 (2014) 008, [arXiv:1311.3575]
- "Cosmological Constraints on MFV SUSY"
  JHEP 1407 (2014) 025, [arXiv:1404.3710]
- *Planned (mid 2015):* "The Fate of Orbitally Excited Dark Matter"

awards

2015 **Office of Science Graduate Student Research Fellowship** Department of Energy

Awarded to outstanding graduate students to pursue their thesis research at a DOE laboratory.

2010 **John S. Toll Award** Physics and Astronomy Dept., Stony Brook University

Awarded to the outstanding graduating physics major.

selected coursework

2010-2014 **Graduate** Cornell University

Computational Physics: computational methods for integration, differentiation linear algebra, regression, Markov models, classification, neural networks, root finding, fast Fourier transform (Python, C++, PyPlot, NumPy, SciPy)
Advanced Experimental Physics Lab: probability and statistics, hypothesis testing

2006-2010 **Undergraduate** Stony Brook University

Computing for Physicists: C++, Fortran, numerical integration, root finding, machine error/precision, regression (linear, non-linear, logistic)
Computing for Mathematicians: Mathematica, computational efficiency, numerical integration, cryptography
Experimental Physics Laboratory: probability and statistics, hypothesis testing
Electronics and Circuit Design

(**listed are topics studied therein**)

interests

professional: stochastic methods, solving problems with both numerical and analytical components, data analysis, model building, non-perturbative methods, computational efficiency, heuristic methods **personal:** guitar (jazz and rock), strategy and simulation games, building computers, GPU's, gaming and graphics engines (Unreal, CryEngine, Unity), differential geometry, renormalization group methods (non-trivial UV fixed points), history, Science Fiction