Sven Kreiss

CONTACT INFORMATION

New York University
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EDUCATION

New York University, New York
Doctor of Philosophy Sept 2009 - present

Tentative Thesis Title: “Discovery and Characterization of the Higgs Boson in the H→ZZ*→4l Channel and the Combination"
Advisor: Kyle Cranmer
Committee: Andy Haas, David Hogg, Allen Mincer, Neal Weiner
MacCracken Fellowship Program

University of Edinburgh, UK
Master of Physics with Honors Mathematical Physics Sept 2005 - Sept 2009

Thesis Title: “New Physics at the LHC: Distinguishability of Supersymmetry and Little Higgs models”
Advisor: Tilman Plehn and Thomas Grégoire

PROFESSIONAL POSITIONS

New York University, New York
Teaching Assistant, Physics Department Fall 2009 - Spring 2011

University of Edinburgh, UK
Teaching Assistant, School of Physics Spring 2007

ElectronX, Germany
Founder, Design and Manufacturing of TV Equipment July 2007 - Aug 2009

HONORS AND AWARDS

NSF LHC Student Support Award
Support for a one-year-stay at CERN in Geneva, Switzerland Feb 2011

TEACHING EXPERIENCE

New York University, New York

Four Seminars for Physics Majors: Higgs Discovery planned for February 2014
Lab Demonstrator, General Physics II Fall 2011
Teaching Assistant, Thermodynamics and Statistical Physics Spring 2010, 2011
Lab Demonstrator, General Physics I Fall 2009

University of Edinburgh, UK

Teaching Assistant, Foundations of Mathematical Physics Spring 2007

Selected Publications

As a member of the ATLAS collaboration, I am an author of over 110 published papers: http://inspirehep.net/author/profile/S.Kreiss.1

Below is a list of publications where I made a significant contribution to the paper itself.

K. Cranmer, S. Kreiss, D. Lopez-Val, T. Plehn. ***A Novel Approach to Higgs Coupling Measurements.*** January 2014
To be submitted to JHEP. arXiv:1401.0080 [hep-ph].

ATLAS collaboration. *Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC.*
Editor. Phys.Lett. B726 (2013) 88-119. July 2013

ATLAS collaboration. *Evidence for the spin-0 nature of the Higgs boson using ATLAS data.*
Phys.Lett. B726 (2013) 120-144. July 2013

ATLAS collaboration. *Combined coupling measurements of the Higgs-like boson with the ATLAS detector using up to 25 fb−1 of proton-proton collision data.*
Editor. ATLAS-COM-CONF-2013-035. March 2013

ATLAS collaboration. ***Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC.***
Responsible for Bayesian cross checks. Phys.Lett. B716 (2012) 1-29. July 2012

ATLAS collaboration. *Combined search for the Standard Model Higgs boson in pp collisions at √s = 7 TeV with the ATLAS detector.*
Phys.Rev. D86 (2012) 032003. July 2012

ATLAS collaboration. *Combined search for the Standard Model Higgs boson using up to 4.9 fb^{-1} of pp collision data at √s = 7 TeV with the ATLAS detector at the LHC.*
Phys.Lett. B710 (2012) 49-66. February 2012

ATLAS collaboration. *Measurement of the top quark pair production cross-section with ATLAS in pp collisions at √s = 7 TeV.*
Eur.Phys.J.C71:1577,2011. December 2010

L. Moneta, K. Belasco, K.S. Cranmer, S. Kreiss, A. Lazzaro, et al. ***The RooStats Project.***
PoS (ACAT2010) 057. October 2012

B.C. Allanach et al. SUSY Les Houches Accord 2.
CPC 180 (2009) 1. January 2008

Datasets and Codes

K. Cranmer, S. Kreiss, D. Lopez-Val, T. Plehn. *Decouple.* Code to reproduce results for "A Novel Approach to Higgs Coupling Measurements", arXiv:1401.0080 [hep-ph].
Github: https://github.com/svenkreiss/decouple. January 2014

K. Cranmer, S. Kreiss, D. Lopez-Val, T. Plehn. *Supplementary Material for "A Novel Approach to Higgs Coupling Measurements".*
Figshare: http://dx.doi.org/10.6084/m9.figshare.888607. December 2013

ATLAS Collaboration. *Likelihoods for the $H \to \gamma\gamma$, $H \to ZZ^* \to 4l$ and $H \to WW^* \to 4l$ channel in the ($\mu_{ggF+ttH} * B/B_{SM}$, $\mu_{VBF+VH} * B/B_{SM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV.*
HepData: http://doi.org/10.7484/INSPIREHEP.DATA.A78C.HK44, September 2013
http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K,
http://doi.org/10.7484/INSPIREHEP.DATA.26B4.TY5F.

Invited Talks

Factorizing Theoretical Uncertainties from LHC Higgs Coupling Measurements
Seminar, **University of Cambridge**, UK — January 2014

Modeling and Statistical Analysis for Higgs Physics at the Large Hadron Collider
Knowledge Extraction via Comparison of Complex Computational Models to Massive Data Sets, **Statistical and Applied Mathematical Sciences Institute (SAMSI)**, Durham, NC, USA — July 2013

H→ZZ→4l Likelihood in ATLAS*
Likelihoods for the LHC Searches, **CERN**, Switzerland — January 2013

Standard Model Higgs Combination and Properties
LHC Days 2012, Split, Croatia — October 2012

RooStats: Statistical Tools for the LHC
Computing in High Energy and Nuclear Physics (CHEP), New York, USA — May 2012

Media / Press

The New Yorker
A Nobel Prize Party: Cheese, Bubbles, and a Boson by Betsy Morais — Oct 2013

New York University
Momentum Campaign — A Scholarship Campaign for NYU — Oct 2013

The New York Times
Chasing the Higgs by Dennis Overbye — March 2013

"On the night of June 24, the graduate students and postdocs in Atlas were tiptoeing toward the 5-sigma finish line. Among them was Sven Kreiss, a New York University graduate student who got a preliminary glimpse of the answer alone in his office late that night when, as part of a crosscheck, he combined the data from two signatures of the Higgs decay and found the result breached 5-sigma. The next day he sent a plot to his adviser Kyle Cranmer, whose birthday it was, saying he had a present for him."

Science
A Particle Consistent with the Higgs Boson Observed with the ATLAS Detector at the Large Hadron Collider by The ATLAS Collaboration — December 2012

I contributed the analysis of signal strength and mass shown in Fig. 12.

Miscellaneous Projects

I attend tech meetups, participate in hackathons and tinker with new technologies.

Quiz Socket: http://www.quizsocket.com
Create real-time quizzes for free. Gather multiple-choice answers from students in large classrooms. Created in a hackathon-style setting: I learned node.js, Redis and WebSockets and created this web application in one weekend.

MorphDemo: http://www.svenkreiss.com/files/morphDemo.html
Interactive demonstration of horizontal morphing algorithm using d3.js. It visualizes the underlying k-d tree and kernel density estimate in real-time.

UnicodeIt: http://www.unicodeit.net
Translates over 700 LaTeX expressions to unicode characters which can be used in emails, facebook, Power Point, Keynote, Word, Pages, etc.

LANGUAGES	English (fluent), German (fluent), French (basic)
PROGRAMMING	C, C++, Python, JavaScript, Lua/Torch7, Java, Basic Most of my development work is done in private repositories, but some public code is on github: http://www.github.com/svenkreiss