Maximilian Swiatlowski

8 rue du Vicaire Savoyard
Geneva, Switzerland 1203

+41 76 253 3392
mswiatlowski@triumf.ca

Education and Work History

TRIUMF, Vancouver, British Columbia
Associate Research Scientist, Particle Physics Department

University of Chicago, Chicago, Illinois *Advisor: Young-Kee Kim, David Miller*
Robert McCormick Fellow, Enrico Fermi Institute

Stanford University, Stanford, California *Advisor: Ariel Schwartzman*
Ph.D. in Physics, September 2015
Dissertation Title: Measuring the Standard Model and Searching for New Physics with Jet Substructure Using the ATLAS Detector

Harvard University, Cambridge, Massachusetts *Advisor: Joao Guimaraes da Costa*
A.B. Physics with Honors, Secondary in Mathematical Sciences, *cum laude*, May 2010

Research

ATLAS Collaboration *2010-present*
Searches for new physics with high top, b, and quark multiplicity
Measurements of the Higgs potential and rare couplings
Jet and missing energy performance and reconstruction
Deep learning for particle reconstruction and triggering using FPGA acceleration
Novel measurements of QCD properties using jet substructure
Commissioning and simulation of the Fast Track Trigger (FTK)
Hadronic boson and top tagging
Light quark/gluon jet discrimination
Silicon pixel and strip test beam measurements, telescope operation

MilliQan Collaboration *2016-2018*
Installation and commissioning, data analysis
HV power supply and fanout design

CDMS Collaboration, SLAC/Stanford *2011*

SPS Accelerator Upgrades, SLAC *2010*

Fellowships & Awards

Robert McCormick Fellowship, University of Chicago *2015-2019*

U.S. ATLAS Outstanding Graduate Student Award *2015*

U.S. LHC Users Association Lightning Round Award Winner *2015, 2016*

NSF Graduate Research Fellowship *2011-2014*

Best Poster, LHCP 2014 Conference *2014*

Best Undergraduate Poster, APS Division of Plasma Physics *2009*

Certificate of Distinction in Teaching *2008, 2009*

Harvard College Research Program Fellow *2007, 2008*

Robert C. Byrd Scholar, National Merit Scholar *2006*

Leadership & Service

Jet/E_T^{miss} Group Convener *2020-present*
- Coordinate full ATLAS Jet/E_T^{miss} group dedicated to hadronic reconstruction
- Organize ≈200 individuals, in reconstruction, calibration, and R&D for new techniques

Missing Energy Group Convener *2018-2020*
- Coordinate large ATLAS Jet/E_T^{miss} subgroup to deliver optimized E_T^{miss} algorithms and associated uncertainties
- Prepare ATLAS E_T^{miss} reconstruction for the challenging conditions of Runs 3 and 4

FTK Offline Software and Simulation Coordinator *2018-2019*

- Coordinate efforts to efficiently and accurately simulate the performance of the Fast Tracker Trigger system, enabling full event tracking in the high-level trigger
- Work with high-level trigger team to integrate hardware tracks to monitoring and triggering algorithms
- Work with hardware teams to reproduce hardware results to bit-level accuracy
- Organize large productions of pattern banks used to identify tracks

SUSY Strong Production Processes Group Convener *2016-2017*
- Coordinate search program of ATLAS for strongly produced supersymmetric particles
- Review and organize 8+ analyses from design to publication

Jet Energy Scale and Resolution Group Convener *2015-2016*
- Coordinate large ATLAS Jet/E_T^{miss} subgroup to deliver jet calibrations and uncertainties
- Organize R&D on jet response measurements, particle flow, pileup tagging, upgrade studies

Working Group 3 Convener, DIS2018 Conference in Kobe, Japan *2018*
- Organize contributions to the largest session at the Deep Inelastic Scattering conference, on BSM and Higgs physics

RPC meets RPV SUSY Task Force Organizer *2017-2018*
- Organizer of a large-scale SUSY-group wide re-interpretation effort to understand the relationship between searches targeting R-parity conserving and violating models
- Developed a novel model space to compare sensitivity of various analyses
- Worked with a large team to quickly and effectively produce unique new results

Analysis Contact and Paper/Note Editor *2015-present*
- Organizer or paper editor of several analyses:
  - Exotic searches for di-Higgs resonances and SM production using the full Run2 dataset (VBF and ggF production modes), *2018-present*
  - Electroweakly produced SUSY decaying to di-Higgs final states, *2017-present*
  - Strongly produced SUSY decaying to many b-jets, *2016-present*
  - Studies of strongly produced SUSY in the RPC-RPV transition, *2017-2018*
  - Performance evaluation of various jet substructure algorithms, *2013, 2014*
- Worked closely with students, postdocs, and faculty from many institutions, organizing large teams and producing timely results
  - Directly supervised 2 PhD theses and 2 undergraduate theses, ongoing supervision of 4 PhD theses, 2 undergraduate theses, and 1 postdoc

Editorial Board Member and Chair *2015-present*
- Member or chair of several ATLAS Editorial Boards on searches, measurements, and detector performance

Enrico Fermi Data Analytics Workshop Organizer *2017*
- Organize introduction and tutorials to statistical methods for searches

UChicago HEP Lunch Seminar Organizer *2015-2016*
- Organize weekly informal seminars from high energy and other fields of physics

Hadronic Calibration Workshop Contributor and Session Organizer *2011-2018*
- Organizer of jet substructure session, 2014; bottom-up uncertainties session, 2018
- Contributions on JES, uncertainties, jet reconstruction, substructure, quark/gluon tagging

Session Organizer, LBNL ATLAS Workshops *2014-2015*
- Jet performance session, Run 2 Performance Kickstart Workshop (2015)
- Jet substructure session, US ATLAS Workshop on LHC Searches (2014)

Organizer, USATLAS Hadronic Final State Forum *2012-2016*
- Designed projects in substructure and tagging
- Organized software and computing resources for participants

Teaching & Outreach

Teaching Fellow for Physics Classes
- Applied Physics 207: *Laboratory Electronics*, Stanford University *2011, 2012*

- Physics 41: *Introductory Electromagnetism*, Stanford University *2011*
- Physics E-6/W: *Physics Made Simple* (Extension School), Harvard University *2010*
- Physics 15b: *Introductory Electromagnetism* (lab component), Harvard University *2009*
- Physics 11b: *Introductory Electromagnetism* (lab component), Harvard University *2008*
- Physics 11a: *Introductory Mechanics* (lab component), Harvard University *2007*

Stanford Educational Studies Program

- *Logistics Coordinator*: Scheduled and organized 300+ weekend classes for 1500+ middle and high school students twice a year *2010-2013*
- *Teacher*: Designed & taught classes on experimental particle physics *2010-2012*

Participant in Picturing to Learn Workshop *March 2008*

- Collaborated with students from the New York School of Visual Arts to better understand the process of scientific visualization and communication with the public.

Talks at Conferences

"Deep Learning for Pion Identification and Energy Calibration with the ATLAS Detector at the LHC", 2020 Accelerated Artificial Intelligence for Big-Data Experiments Conference, *online only*, October 2020

"Constraining the Higgs boson self-coupling in a combined measurement of single and double Higgs boson channels at the ATLAS experiment", ICHEP 2020, *online only*, July 2020

"BSM Results at the LHC", Plenary talk at Americal Physical Society Division of Particles and Fields, Boston, Massachusetts, July 2019

"Search for Di-Higgs Production via Vector Boson Fusion", Americal Physical Society Division of Particles and Fields, Boston, Massachusetts, July 2019

"Jet and Missing Energy Performance for di-Higgs Searches", Double Higgs Production at Colliders Workshop, Batavia, Illinois, September 2018

"Working Group 3 (Higgs and BSM Physics) Summary", Plenary at DIS 2018, Kobe, Japan, April 2018

"Searches for electroweak Higgsino production in compressed scenarios with ATLAS", La Thuile 2018, La Thuile, Italy, February 2018

"Jet Substructure: The ATLAS Perspective", CMS Jet Substructure Planning for the Future, Batavia, Illinois, November 2016

"ATLAS SUSY Results with $\geq 3b$-jets", US LHC Users Association Meeting, Berkeley, California, November 2016

"Search for gluinos decaying via top or bottom squarks with the ATLAS detector", SUSY Conference, Melbourne, Australia, July, 2016

"Searching for all-hadronic SUSY with Jet Substructure", US LHC Users Association Meeting, Batavia, Illinois, November 2015

"New SUSY and Jet Analyses at ATLAS", Stanford/SLAC Jamboree Public Talk, Stanford, California, November 2014

"q/g Discrimination and Jet Pull with ATLAS", BOOST Conference, London, United Kingdom, August 2014

"Jets and Substructure with ATLAS", US ATLAS Workshop on LHC Searches at LBNL, Berkeley, California, January 2014

"Tagging Quark/Gluon Initiated Jets at ATLAS", Boston Jet Workshop, Boston, Massachusetts, January 2014

"Pruning and Q-Jets at ATLAS", BOOST Conference, Flagstaff, Arizona, August 2013

"Jet Substructure and Tagging with Tracks", Northwest Terascale Workshop: Using Jet Substructure, April 2012 "Tagging q/g and $g \to b\bar{b}$ Jets at ATLAS", APS April Meeting, April 2012

Invited Seminars

"Searching With di-Higgs Final States at ATLAS", University of Geneva DPNC Seminar, Geneva, Switzerland, November 2020

"Searching With di-Higgs Final States at ATLAS", University of Pennsylvania High Energy Physics Seminar, Philadelphia, Pennsylvania, October 2019

"Searching With di-Higgs Final States at ATLAS", Rutgers University High Energy Physics Seminar, New Brunswick, New Jersey, October 2019

"Searching With di-Higgs Final States at ATLAS", Simon Fraser University Physics Colloquium, Burnaby, British Columbia, January 2019

"Searching With di-Higgs Final States at ATLAS", TRIUMF Colloquium, Vancouver, British Columbia, April 2019

"Searching Beyond the Standard Model: Natural Higgsinos with ATLAS, and MilliCharged Particles with MilliQan", Duke University Seminar, Durham, North Carolina, October 2018

"Searching for SUSY with ATLAS: Current Results and Future Challenges", Waseda University Seminar, Tokyo, Japan, April 2018

"Searching for SUSY with ATLAS, and Looking Beyond with MilliQan", University of Tokyo ICEPP Seminar, Tokyo, Japan, April 2018

"Searching for Naturalness at the LHC in the Higgs Era", Nikhef Seminar, Amsterdam, Netherlands, March 2018

"Searching for SUSY with ATLAS, and Looking Beyond with MilliQan", University of Victoria Seminar, Victoria, Canada, November 2017

"Searching for SUSY with ATLAS, and Looking Beyond with MilliQan", Simon Fraser University Seminar, Burnaby, Canada, November 2017

"Searching for SUSY with ATLAS, and Looking Beyond with MilliQan", University of Washington Seminar, Seattle, Washington, November 2017

"Searching for SUSY with ATLAS, and Looking Beyond with MilliQan", TRIUMF Seminar, Vancouver, Canada, November 2017

"A New Detector for the LHC: Physics and Installation of the MilliQan Demonstrator", UChicago HEP Lunch Seminar, Chicago, IL, October 2017

"Hunting SUSY at $\sqrt{s} = 13$ TeV", Cornell LEPP Journal Club, Ithaca, NY, November, 2016

"Hunting SUSY at $\sqrt{s} = 13$ TeV", UIUC HEP Seminar, Champaign, IL, October, 2016

"Hunting SUSY at $\sqrt{s} = 13$ TeV", LPNHE HEP Seminar, Paris, France, September, 2016

"ATLAS SUSY Results at $\sqrt{s} = 13$ TeV", SLAC Elementary Particle Physics Seminar, Menlo Park, CA, June, 2016

"ATLAS SUSY Results at $\sqrt{s} = 13$ TeV", Brookhaven HEP Seminar, Upton, NY, March, 2016

"ATLAS SUSY Results at $\sqrt{s} = 13$ TeV", SUNY Buffalo Seminar, Buffalo, NY, March, 2016

"ATLAS SUSY Results at $\sqrt{s} = 13$ TeV", University of Chicago HEP Lunch Seminar, Chicago, IL, February, 2016

"Seeing Color Flow in $t\bar{t}$", Harvard University Laboratory for Particle Physics and Cosmology Seminar, Cambridge, MA, December 2015

"Seeing Color Flow in $t\bar{t}$", Argonne HEP Lunch Seminar, Argonne, IL, December 2015

"Seeing Color Flow in $t\bar{t}$", University of Chicago HEP Seminar, Chicago, IL, October 2015

"Searching for RPV SUSY with Jet Substructure", Durham University Institute for Particle Physics Phenomenology Seminar, Durhuam, UK, May 2015

"New Analysis Techniques With Jets at ATLAS", University of Arizona PNUT Seminar, Tucson, AZ, October 2014