

Meisam Ghasemi Bostanabad

HIGH ENERGY PHYSICIST · FRONT-END DEVELOPER

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“The good thing about science is that it’s true whether or not you believe in it. (Neil Tyson)”

Summary

I am an experimental particle physicist involved with the ATLAS collaboration at the particle group, at University of Victoria. My research focuses on looking for signs of physics Beyond the Standard Model with a particular interest in Electroweak and Strong Supersymmetry with hadronic final states. I am also passionate about boosted object reconstruction, machine learning, and data quality in ATLAS sub-detectors. When I am not busy trying to prove the existence of SUSY, I spend time on web developing with new front-end frameworks.

Education

University of Victoria

Victoria, Canada

PH.D. HIGH ENERGY PHYSICS, JUSTIN ALBERT

Jan. 2015 - May. 2021

- Dissertation: 🔗 Search for Supersymmetry in final states with multiple bottom quarks with the ATLAS detector.
CERN Document Server record: 🔗 2727954.

Sharif University of Technology, Institute for Research in Fundamental Sciences (IPM)

Tehran, Iran

M.S. HIGH ENERGY PHYSICS, HESSAMADDIN ARFAEI, SAEID PAKTINAT

Mar. 2012 - Aug. 2014

- Dissertation: 🔗 Multijet background estimation using M_{T2} method in third generation Supersymmetry search.

University of Tehran

Tehran, Iran

B.S. NUCLEAR PHYSICS, HAMIDREZA MOSHFEGH

Jan. 2018 - July. 2012

Research Interests

High Energy Physics, Physics Beyond the Standard Model, Strong Inclusive and Electroweak Supersymmetry, Reconstruction of Boosted Object and Higgs Boson, Machine Learning, Hadronic Final States, Detector Data Quality, Web Front-end Developing.

Professional Experience

University of Victoria

Victoria, Canada

PH.D. HIGH ENERGY PHYSICS, JUSTIN ALBERT

Jan. 2015 - May. 2021

- Deployed a preliminary BDT tau reconstruction algorithm in new physics search for SUSY with stop to stau decay. SUSY stop to stau analysis contact member to deliver and deploy recommendations from tau combined performance group.
- Main analyzer for physics search in strong inclusive SUSY with multiple b -jets. Worked on trigger efficiency, analysis data-MC request, QCD estimation, theory systematic estimation for the dominant backgrounds, unblinded fit results in cut-and-count approach, and comparison study of truth- and reconstructed-level of Neural-net weights.
- Analyzer for physics search in electroweak SUSY with multiple b -jets. Worked on Higgs reconstruction technique using b -jet properties, development of analysis framework, implementation of different M_{T2} variables in analysis ntuple, truth-level study, and theory systematic estimation for the dominant backgrounds.
- Developer of python framework to monitor offline conditional and unconditional noisy channels in ATLAS runs. This framework is updated in order to connect with the LTTNK (Liquid Argon trigger tower noise killer) package and provide fully noisy channel report (both offline and online).
- Done 6 blocks of ATLAS Calo desk shift and 2 blocks of Calo software on-call during ATLAS 2017 data taking.
- Editor of internal supporting documentations for the SUSY strong and SUSY electroweak multi- b analyses for full ATLAS run2.
- One of the core instructors for the virtual ATLAS-Canada Masterclass in 2021. The annual ATLAS-Canada Masterclass event includes both presentation and analysis portions which tutors are supposed to guide students to analyse ATLAS datasets (including Higgs decay to $b\bar{b}$ events).

- Performing physics studies for SUSY stop to top jet analysis. Worked on M_{T2} interpretation and ABCD method to compute multi-jet background. The results are shown in M.S. dissertation.

Teaching Assistant

COURSES

2020	PHYS 321A , Classical Mechanics I	Fall Term
2019	PHYS 326 , Electricity and Magnetism	Winter Term
2019	PHYS 314 , Nuclear Physics and Radioactivity	Fall Term
2018	PHYS 111 , Introductory Physics II	Fall Term
2016	PHYS 323 , Quantum Mechanics I	Fall Term

Selected Talks and Posters

ATLAS Canada Workshop

Ottawa, Canada

SEARCH FOR SUSY IN STOP TO STAU DECAY CHANNEL WITH FULLY HADRONIC FINAL STATE

May. 2016

ATLAS Liquid Argon Week

CERN

DEVELOPMENT OF THE UPD AND LTTNK PACKAGES (OFFLINE AND ONLINE NOISE TAGGERS)

Jul. 2017

Canadian Association of Physics Conference (poster)

Vancouver, Canada

SEARCH FOR STRONG AND ELECTROWEAK SUSY WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS

June. 2019

International Symposium on Lepton Photon (poster)

Toronto, Canada

SEARCH FOR SUSY WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS (79 fb^{-1})

August. 2019

Canadian Association of Physics Conference

Virtual Platform

SEARCH FOR SUPERSYMMETRY WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS (139 fb^{-1})

June. 2020

SUSY Week

Virtual Platform

DEVELOPMENT OF CUT-AND-COUNT APPROACH IN SUSY ANALYSES

June. 2020

40th International Conference on High Energy Physics

Virtual Platform

SEARCH FOR SUSY WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS IN ATLAS (139 fb^{-1})

July. 2021

Papers

Inspirehep record: 1803.10178

SEARCH FOR TOP SQUARKS DECAYING TO TAU SLEPTONS IN PPPP COLLISIONS AT $\sqrt{s} = 13 \text{ TeV}$ WITH THE ATLAS DETECTOR

May. 2018

CERN Document Server record

SEARCH FOR SUPERSYMMETRY IN FINAL STATES WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS IN

PROTON-PROTON COLLISIONS AT $\sqrt{s} = 13 \text{ TeV}$ WITH THE ATLAS DETECTOR (79 fb^{-1})

July. 2018

To be submitted to PHYSICAL REVIEW D in 2022


SEARCH FOR THE STRONG SUPERSYMMETRY IN FINAL STATES WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS IN PROTON-PROTON COLLISIONS AT $\sqrt{s} = 13$ TeV WITH THE ATLAS DETECTOR ($139 fb^{-1}$). (ANALYSIS PASSED THE SUSY APPROVAL AND IS CLOSE TO THE PUBLICATION)

2022

To be submitted to PHYSICAL REVIEW D in 2022

SEARCH FOR ELECTROWEAK SUPERSYMMETRY IN FINAL STATES WITH MISSING TRANSVERSE MOMENTUM AND MULTIPLE B-JETS IN PROTON-PROTON COLLISIONS AT $\sqrt{s} = 13$ TeV WITH THE ATLAS DETECTOR ($139 fb^{-1}$). (ANALYSIS PASSED THE FULL ANALYSIS REVIEW AND IS CLOSE TO THE SUSY APPROVAL)

2022

 A full list of publications is available in INSPIRE.

Languages

Persian (fluent), Turkish (fluent), Arabic (elementary), English (advance), French (elementary - A2 level).

Programming Languages

C, C++, Python, Matlab, LATEX, HTML, CSS, MySQL, PHP, JavaScript, JSON, Continuous Integration, Version Control, GitHub/GitLab.

Computing Packages

ROOT, NumPy, SciPy, pyhf, uproot, root numpy, rootpy, PyROOT, HistFitter, Matplotlib, pandas, Keras, scikit-learn, TensorFlow, Docker, Git, NodeJS, jQuery, Bootstrap, React.

Skills

Effective communication, public speaking, collaboration, project management, mentoring, adaptability, flexibility, cooking, fitness.