Matt LeBlanc, Ph.D.

Curriculum vitae

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The University of Manchester

Contact Information

Matt LeBlanc
1 Espl. des Particules
Meyrin, Genève
Suisse 1211

Phone: +41 78 611 70 50
Email: matt.leblanc@cern.ch
Web: https://cern.ch/mleblanc
ORCID: 0000-0001-5977-6418

Research in High-Energy Physics

Member of the **ATLAS Collaboration** from 2010-2023 (signing author, 2015-Present).

- Differential jet and jet substructure measurements.
- Hadronic object reconstruction & calibration; boosted object tagging.
- Searches for new particles in hadronic final states.
- *(prev.)* Characterisation of prototype, radiation-hard CMOS pixel sensors.

Positions

University of Manchester
April 2023 — Present
Manchester, Greater Manchester, England, UK
Postdoctoral Research Associate

CERN
January 2021 — March 2023
Meyrin, Geneva, Switzerland
Senior Research Fellow

University of Arizona
July 2017 — December 2020
Tucson, Arizona, USA
Postdoctoral Research Associate

Education

University of Victoria
Fall 2011 — Spring 2017
Victoria, BC, Canada
Ph.D., Experimental Particle Physics
Advisor: Rob McPherson (Victoria / IPP)

Acadia University
Fall 2007 — Spring 2011
Wolfville, NS, Canada
B.Sc.(H.), Physics & Mathematics

J. L. Ilsley High School
Fall 2004 — Spring 2007
Halifax, NS, Canada
French Immersion

Leadership

ATLAS Collaboration

- **Physics Coordination**, *ex officio* member (Jet/EtMiss Convenership), *2022-2023.*
- **Jet/EtMiss Combined Performance Group Convener**, *2022-2023.*
  - **Coordination of work from ~200 contributing physicists**, across five subgroups on topics related to jet and missing transverse momentum reconstruction, calibration, software and R&D for new approaches.
  - **Oversight of ~30 'Authorship Qualification Projects'** (work typically performed by new graduate students, postdocs and faculty when joining the collaboration).
  - **Led the collaboration-internal review of public results,** including peer-reviewed publications, other preliminary results and presentations at international conferences that were prepared by members of the group.
- **Subgroup Convener**, Standard Model Jet & Photon Physics, *2020-2022.*
- **Subgroup Convener**, Jet/EtMiss Definitions & MC Calibrations, *2019-2020.*
- **Subgroup Convener**, Jet/EtMiss Jet Energy Scale & Resolution, *2018-2019.*
- Other roles
  - **Shift Leader**, ATLAS Control Room. *Run 2, 3 pp and Pb+Pb data-taking & pilot-beam operations between 2018-2022.*
  - **Coordinator**, core software ('Athena') code review shifts. *2017-2021.*
  - **Liaison,** between Jet/EtMiss and Supersymmetry Groups. *2017-2020.*
  - **Calo/Forward Detector Shifter**, ATLAS Control Room. *Run 2 pp data-taking in 2015.*

Awards

CTEQ Collaboration **Wu Ki Tung Award for Early-Career Research in QCD**, *2022*.
Citation: *"For important contributions to the measurements of QCD dynamics using jets and jet substructure, as well as for long standing contributions and leadership in jet reconstruction and calibration."*

NSERC **Postgraduate Scholarship - Doctoral**, *2014-2017.*
University of Victoria **President's Research Scholarship**, *2012-2013, 2014-2017.*
NSERC **Alexander Graham Bell Canada Graduate Scholarship**, *2012-2013.*
University of Victoria **Fellowship**, *2011-2012.*

Acadia University **'University Scholar' Designation**, *2011.*
AUPAC 2011 **NSERC Representative's Honourable Mention** (Presentation Prize).
TRIUMF **Summer Student Award - Atlantic Region**, *2010.*
NSERC **Undergraduate Summer Research Award**, *2010*, *Declined.*
Acadia University **Kenneth A. Killam Award**, 2010.
Acadia University **Dr. Lalia B. Chase Scholarship**, 2008, 2009, *2010*.
Acadia University **Honours Research Summer Award**, *2009*.
Acadia University **Acadia Physics Departmental Scholarship**, *2009*.
Acadia University **Edgar Delap Bent Memorial Scholarship in Physics**, *2008*.
Acadia University **Alfred D. Arthurs Scholarship in Chemistry**, *2007*.
Acadia University **Acadia Excellence Scholarship**, *2007*.

Publications and preliminary results

I am an author of over 700 peer-reviewed results since 2015, as a member of the ATLAS Collaboration. Listed below are selected results where I have made a personal contribution.

*In experimental high-energy physics, a **Contact Editor** is a leadership role on an analysis team, acting as a point of contact to the larger experimental collaboration. They are responsible for coordinating analysis efforts, preparing the manuscript, and for ensuring that the physics results are produced in a timely and accurate manner.*

Precision jet and jet substructure measurements

Papers

- ATLAS Collaboration, *Measurements of multijet event isotropies using optimal transport with ATLAS.* Submitted to JHEP. arXiv:2305.16930 [hep-ex].
  - ✳ Contact editor
  - ✳ Theory associate for analysis (STA): Cari Cesarotti (MIT)
  - ✳ ATLAS physics briefing: *Giving collisions a new shape: New ATLAS result measures isotropy of LHC events*.
- ATLAS Collaboration, *Measurement of the Lund Jet Plane with charged particles in 13 TeV pp collisions with the ATLAS detector.* Phys. Rev. Lett. 124 (2020) 222002. ATLAS-STDM-2018-57, arXiv:2004.03540 [hep-ex].
  - ✳ Contact editor
  - ✳ ATLAS physics briefing: *Novel probes of the strong force: precision jet substructure and the Lund jet plane*
- ATLAS Collaboration, *A measurement of soft-drop jet observables in pp collisions with the ATLAS detector at sqrt(s)=13 TeV*. Phys. Rev. D 101, 052007 (2020). ATLAS-STDM-2017-33, arXiv:1912.09837 [hep-ex].
  - ✳ ATLAS physics briefing: *Novel probes of the strong force: precision jet substructure and the Lund jet plane*

Hadronic object reconstruction and calibration

Papers

- ATLAS Collaboration, *New techniques for jet calibration with the ATLAS detector*. Accepted by EPJC. ATLAS-JETM-2022-01, arXiv:2303.17312 [hep-ex].
- ATLAS Collaboration, *Optimisation of large-radius jet reconstruction for the ATLAS detector in 13 TeV proton-proton collisions.* Eur. Phys. J. C 81 (2021) 4, 334. ATLAS-JETM-2018-06, arXiv:2009.04986 [hep-ex].
  - ✳ Contact editor

- ATLAS Collaboration, *Jet energy scale and resolution measured in pp collisions at sqrt(s)=13 TeV with the ATLAS detector.* Eur. Phys. J. C 81 (2021) 8, 689**.** ATLAS-JETM-2018-05, arXiv:2007.02645 [hep-ex].
- ATLAS Collaboration, *In situ calibration of large-radius jet energy and mass in 13 TeV proton-proton collisions with the ATLAS detector*. Eur. Phys. J. C 79 (2019) 135. ATLAS-JETM-2018-02, arXiv:1807.09477 [hep-ex].
  - ✳ Contact editor
  - ✳ CERN Courier Article. *A decade of advances in jet substructure.* 28 September, 2018.
- ATLAS Collaboration, *Identification of high transverse momentum top quarks in pp collisions at sqrt(s) = 8 TeV with the ATLAS detector.* Journal of High Energy Physics, 06, 093 (2016). ATLAS-PERF-2015-04, arXiv:1603.03127 [hep-ex].
  - ✳ ATLAS Physics Briefing: *ATLAS ready to "boost" Run 2 physics*.

Preliminary results

- ATLAS Collaboration, *Constituent-based W-boson tagging with the ATLAS Detector.* ATL-PHYS-PUB-2023-020, Public note (Preliminary result). July 2023.
- ATLAS Collaboration, *Identification of hadronically-decaying top quarks using UFO jets with ATLAS in Run 2.* ATL-PHYS-PUB-2021-028, Public note (Preliminary result). July 2021.
- ATLAS Collaboration, *Impact of Alternative Inputs and Jet Grooming on Large-R Jet Performance.* ATL-PHYS-PUB-2019-027, Public note (Preliminary result). July 2019.
  - ✳ Contact editor
- ATLAS Collaboration, *Impact of Pile-up on Jet Constituent Multiplicity in ATLAS.* ATL-PHYS-PUB-2018-011, Public note (Preliminary result). July 2018.
- ATLAS Collaboration, *Impact of Alternative Inputs and Grooming Methods on Large-R Jet Reconstruction in ATLAS.* ATL-PHYS-PUB-2017-020, Public note (Preliminary result). December 2017.
- ATLAS Collaboration, *Jet reclustering and close-by effects in ATLAS Run 2.* ATLAS-CONF-2017-062, Preliminary conference result for BOOST 2017, Buffalo, New York, USA. 17-21 July, 2017.
  - ✳ Contact editor

Public plots

- ATLAS Collaboration, *LAr Cells in Clusters with Timing.* LARG-2023-05, public plots (July 2023).
- ATLAS Collaboration, *Comparison of W tagging performance with different ML algorithms.* JETM-2023-003, public plots (July 2023).
- ATLAS Collaboration, *E/p measurements and Geant4 physics list comparisons.* JETM-2020-03, public plots (November 2020).
- ATLAS Collaboration, *In situ large-R jet energy scale calibration and uncertainties in 2015-2017 data,* JETM-2019-05, public plots (July 2019).

- ALTAS Collaboration, *Particle flow jet energy scale in 2015-2017 data and simulation.* JETM-2019-02, public plots (February 2019).
- ATLAS Collaboration, *Particle flow jet energy resolution in 2017 data and simulation.* JETM-2019-01, public plots (February 2019).
- ATLAS Collaboration, *Jet energy scale and uncertainties in 2015-2017 data and simulation.* JETM-2018-006, public plots (November 2018).
- ATLAS Collaboration, *Jet energy resolution in 2017 data and simulation.* JETM-2018-005, public plots (September 2018).
- ATLAS Collaboration, *Stability of jet mass for top, W, and light jets as a function of pile-up.* JETM-2016-014, public plots (December 2016).

Searches for new particles

Papers

- ATLAS Collaboration, *Pursuit of paired dijet resonances in the Run 2 dataset with the ATLAS detector.* Submitted to PRD. ATLAS-EXOT-2022-18. arXiv:2307.14944 [hep-ex].
  - *Contact editor*
- ATLAS Collaboration, *Constraints on mediator-based dark matter models using sqrt(s) = 13 TeV pp collisions at the LHC with the ATLAS detector.* ATLAS-EXOT-2017-32, JHEP 05 (2019) 142. arXiv:1903.01400 [hep-ex].
- ATLAS Collaboration, *Combination of the searches for pair-produced vector-like partners of the third-generation quarks at sqrt(s) = 13 TeV with the ATLAS detector.* Phys. Rev. Lett. 121 (2018) 211801. ATLAS-EXOT-2017-17, arXiv:1808.02343 [hep-ex].
  - Physical Review Letters “Editor’s Suggestion”
  - CERN Press statement. *The incredible lightness of the Higgs (Français)*.
  - ATLAS Physics Briefing. *Could a new type of quark fix the "unnaturalness" of the Standard Model?*
- ATLAS Collaboration, *Search for new phenomena in events with same-charge leptons and b-jets in pp collisions at sqrt(s) = 13 TeV with the ATLAS detector.* JHEP 12 (2018) 039. ATLAS-EXOT-2016-16, arXiv:1807.11883 [hep-ex].
- ATLAS Collaboration, *Search for 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*. JHEP 06 (2017) 107. ATLAS-SUSY-2016-10, arXiv:1711.01901 [hep-ex].
- ATLAS Collaboration, *Search for pair production of gluinos decaying via stop and sbottom in events with b-jets and large missing transverse momentum in pp collisions at sqrt(s) = 13 TeV with the ATLAS detector*. Physical Review D 94, 032003 (2016). ATLAS-SUSY-2015-10, arXiv:1605.09318 [hep-ex].
- ATLAS Collaboration, *Search for direct pair production of the top squark in all-hadronic final states in proton-proton collisions at sqrt(s) = 8 TeV with the ATLAS detector*. Journal of High Energy Physics, 09, 015 (2014). ATLAS-SUSY-2013-16, arXiv:1406.1122 [hep-ex].

High-energy physics phenomenology

Papers

- ***(In-prep.)*** C. Cesarotti & M. LeBlanc, *A Field Guide for Transverse Event Shapes with Optimal Transport.*
- M. LeBlanc, B. Nachman & C. Sauer, *Going off topics to demix quarks and gluons in extractions of α_S.* JHEP 02 (2023) 150, Feb 15, 2023. arXiv:2206.10642 [hep-ph].
- B. Nachman, S. Rappoccio, N. Tran (editors) *et al. Jets and Jet Substructure at Future Colliders.* Front. Phys. 10, 22 June 2022. arXiv:2203.07462 [hep-ph].

Preliminary results

- ATLAS Collaboration, *Towards a precise interpretation of the top quark mass parameter in ATLAS Monte Carlo samples.* ATL-PHYS-PUB-2021-034, Public Note (Preliminary result). July 2021.
  - ✳ Contact editor
  - ✳ This work was a phenomenological study performed within the ATLAS Collaboration, involving several associated theoretical physicists : Andre Hoang (Vienna), Sonny Mantry (Georgia Tech), Adithya Pathak (Vienna), Iain Stewart (MIT)
- D. De Florian, M. Donegà, M. Dührssen-Debling, S. Jones, J. Bendavid, A. Huss, J. Huston, S. Kallweit, D. Maître, S. Marzani, B. Nachman, V. Ciulli, S. Prestel, E. Re, *et al. Les Houches 2019: Physics at TeV Colliders: Standard Model Working Group Report.* arXiv:2003.01700 [hep-ph]. Proceedings of the 2019 Les Houches Workshop on Physics at TeV Colliders, Les Houches, France.
  - ✳ Contributor to jet substructure studies.

Conference and workshop proceedings

- M. LeBlanc, on behalf of the ATLAS and CMS Collaborations**,** *Jet and photon physics in ATLAS and CMS.* Proceedings of the 56th Rencontres de Moriond on QCD and High Energy Interactions, La Thuile, It, 19 - 26 Mar 2022. ATL-PHYS-PROC-2022-049.
- M. LeBlanc, on behalf of the ATLAS Collaboration. Measurements of event shapes and jet substructure with ATLAS Run 2 data. Proceedings of the Eighth annual conference on Large Hadron Collider Physics (LHCP 2020) — PoS(LHCP2020)144. Online. ATL-PHYS-PROC-2020-047.
- M. LeBlanc, on behalf of the ATLAS Collaboration. *Inclusive searches for squarks and gluinos with the ATLAS detector.* Proceedings of XXVI International Workshop on Deep-Inelastic Scattering and Related Subjects — PoS(DIS2018)078. 16-20 April 2018. Kobe, Hyogo, Japan. ATL-PHYS-PROC-2018-080.
- R. P. Taylor *et al. The evolution of cloud computing in ATLAS*. Journal of Physics: Conference Series, Volume 664, Clouds and Virtualization (CHEP 2015, Okinawa, Japan).

Silicon detector research & development

- F. Dachs *et al. Development of a large-area, light-weight module using the MALTA monolithic pixel detector.* NIM A 1047 (2023) 167809. Proceedings of the 15th Pisa Meeting on Advanced Detectors (PM2021).
- H. Pernegger *et al. MALTA-Cz: A radiation hard full-size monolithic CMOS sensor with small electrodes on high-resistivity Czochralski substrate.* arXiv:2301.03912 [physics.ins-det]. Submitted to JINST.
- G. Gustavino *et al. Timing performance of radiation-hard MALTA monolithic pixel sensors*, JINST 18 (2022) 03, C0301. arXiv:14676 [physics.ins-det]. Proceedings of the 23rd international workshop on Radiation Imaging Detectors (IWORID 2022).
- D. Dobrijević *et al. MALTA3: Concepts for a new radiation tolerant sensor in the TowerJazz 180 nm technology.* NIM A 1040 (2022) 167226. Proceedings of Vienna Conference on Instrumentation 2022 (VCI2022).
- M. van Rijnbach *et al.*, *Radiation hardness and timing performance in MALTA monolithic pixel sensors in TowerJazz 180 nm*. JINST 17 (2022) 04, C04034. Proceedings of TWEPP21.
- M. LeBlanc *et al. Recent results with radiation-tolerant TowerJazz 180 nm MALTA Sensors.* Nucl.Instrum.Meth.A 1041 (2022) 167390. arXiv:2209.04459 [physics.ins-det]. Proceedings of Vienna Conference on Instrumentation 2022 (VCI2022).
- F. Piro *et al. A 1 μW radiation-hard front-end in a 0.18 μm CMOS process for the MALTA2 monolithic sensor.* IEEE Trans. Nucl. Sci. 69 6 1299-1309, June 2022.

Magazines and online articles

- ATLAS Collaboration, *Machine learning is revolutionising our understanding of particle "jets"*. Online. 3 August 2023.
- ATLAS Collaboration, *Signal and noise: how timing measurements and AI are improving ATLAS event reconstruction*. Online. 1 August 2023.
- ATLAS Collaboration, *Giving collisions a new shape: New ATLAS result measures isotropy of LHC events*. Online. 14 July, 2023.
- ATLAS Collaboration, *A decade of advances in jet substructure.* CERN Courier. Volume 58, Number 8. October, 2018.
- ATLAS Collaboration, *ATLAS Physics Briefing: Novel probes of the strong force: precision jet substructure and the Lund jet plane*. Online. 19 April, 2020.

Open-source software

- G. Stark, J. Da, M. Milesi, G. Facini, J. Dandoy, K. Krizka, M. LeBlanc, T. Novak, F. Scutti, B. Tuan, A. Tuna, M. Muskinja, J. Bossio, J. Olsson, T. Lazovich, B. Tong, B. Carlson, C. Doglioni, B. Amadio, R. Zou, M. Frate, P. Bryant, M. Perego, L. Lee, L. McClymont, M. Swiatlowski, C. Nelson, C. Shimmin, A. Cukierman, A. Coccaro. *xAOD AnaHelpers : ATLAS Run II analysis framework for AnalysisTop and AnalysisBase for proton-proton physics.* (2015). url: https://github.com/UCATLAS/xAODAnaHelpers. Zenodo: http://doi.org/10.5281/zenodo.998269.

Presentations

Talks at conferences

- *Testing the Strong Force with Photons and Jets.* Plenary Talk, Standard Model at the LHC (SM@LHC 2023). Fermilab National Laboratory, Batavia, Illinois, USA. 10-14 July 2023. On behalf of the ATLAS and CMS Collaborations. Plenary.
- *Breaking q/g degeneracies when extracting the strong coupling from jet substructure.* First Lund Jet Plane Institute, CERN Theory Department. 3-7 July 2023. Plenary.
- *Overview (Experimental).* 14th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2022). Universität Hamburg, Hamburg, Germany. 15-19 August, 2022. Plenary.
- *Going off topics to demix quarks and gluons when extracting α_S.* 14th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2022). Universität Hamburg, Hamburg, Germany. 15-19 August, 2022. Plenary.
- *Jet Reconstruction in ATLAS.* Semi-Visible Jets Workshop 2022, ETH Hönggerberg, Zürich, Switzerland. 5-7 July, 2022. Plenary, on behalf of the ATLAS Collaboration.
- *Jet and photon physics in ATLAS and CMS.* 56th Rencontres de Moriond: QCD and High-Energy Interactions Session. La Thuile, Aosta, Italy. 19-26 March, 2022. Plenary, on behalf of the ATLAS and CMS Collaborations.
- *Recent results with radiation-tolerant TowerJazz 180 nm MALTA Sensors.* The 16th Vienna Conference on Instrumentation (VCI2022). Online. 21-25 February, 2022. Plenary.
- *Jet substructure and event shapes with ATLAS.* 8th annual Conference on Large Hadron Collider Physics (LHCP 2020). Online. 25-30 May, 2020. Parallel, on behalf of the ATLAS Collaboration.
- *Precision jet substructure measurements with ATLAS Run 2 data.* APS Virtual Meeting, online,18-21 April, 2020. Parallel, on behalf of the ATLAS Collaboration.
- *Standard Model Highlights & Prospects.* 2019 Brookhaven Forum: Particle Physics & Cosmology in the 2020's. Brookhaven National Laboratory, Upton, New York, USA. 25-27 September, 2019. Plenary, on behalf of the ATLAS and CMS collaborations.
- *Novel Probes of QCD: Jet Substructure Measurements at the LHC.* 2019 Meeting of the Department of Particles & Fields of the American Physical Society. Boston, Massachusetts, USA. 29 July - 2 August, 2019. Parallel, on behalf of the ATLAS, CMS, ALICE and LHCb collaborations.
- *Hadronic final state reconstruction in ATLAS SUSY searches.* 11th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2019). Cambridge, Massachusetts, USA. 21-27 July, 2019. Plenary, on behalf of the ATLAS Collaboration.
- *Inclusive searches for squarks and gluinos with the ATLAS detector.* 26th International Workshop on Deep-Inelastic Scattering and Related Topics (DIS 2018). Kobe, Hyogo, Japan. 16-20 April, 2018. Parallel, on behalf to the ATLAS Collaboration.
- *Tagging boosted top quarks and Higgs bosons in ATLAS.* 7th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2015), Chicago, IL, USA. 10-14 August, 2015. Plenary, on behalf of the ATLAS Collaboration.

- *Direct stop production in boosted hadronic final states*. 50th Winter Nuclear and Particle Physics Conference. Banff, AB, Canada. February 16, 2013.
- *Top-antitop cross section measurement with the ATLAS detector at the LHC.* Atlantic Universities Physics and Astronomy Conference. St. Francis-Xavier University, Antigonish, NS, Canada. February 4-6, 2011.
- *Top-antitop cross section measurement with the ATLAS detector at the LHC*. 52nd Canadian Undergraduate Physics Conference. Dalhousie University, Halifax, NS, Canada. October 13-16, 2010.
- *Simulation and interpretation of HA-ADF images in scanning transmission electron microscopy*. Atlantic Universities Physics and Astronomy Conference. Acadia University, Wolfville, NS, Canada. February 5-7, 2010.

Poster presentations

- *Comparative performance of ATLAS boosted W taggers using different AI/ML algorithms.* 15th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2023). Lawrence Berkeley National Laboratory, Berkeley, California, USA. 31 July - 4 August, 2023. Poster, on behalf of the ATLAS Collaboration.
- *Measurements and Applications of Jet Substructure with the ATLAS Detector.* 2019 Meeting of the Department of Particles & Fields of the American Physical Society. Boston, Massachusetts, USA. 29 July - 2 August, 2019. Poster, on behalf of the ATLAS Collaboration.
- *Impact of Alternative Inputs and Grooming Methods on Large-R Jet Reconstruction in ATLAS*. 133rd LHCC Meeting Open Session. CERN, Geneva, Switzerland. 26 February - 2 March, 2018. Poster, on behalf of the ATLAS Collaboration.
- *Jet reclustering and close-by effects in ATLAS Run 2.* 8th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches in HEP (BOOST 2017). Buffalo, NY, USA. 16-21 July, 2017. Poster, on behalf of the ATLAS Collaboration.

Seminars

- *Perspectives on hadronic final states, from up close & far away.* Università di Genova. Genoa, Italy. May 24, 2023.
- *Advances in Jet Physics at the LHC: Insights into Hadronic Final States & the Strong Force with ATLAS Run 2 Data.* Brookhaven National Laboratory. Upton, New York, USA. March 27, 2023.
- *Advances in Jet Physics at the LHC: Insights into Hadronic Final States & the Strong Force with ATLAS Run 2 Data.* Southern Methodist University. Dallas, Texas, USA. March 23, 2023.
- *MAPS to Discoveries.* Argonne National Laboratory. Lemont, Illinois, USA (online). October 21, 2021.
- *Inside and Out: Precision Jet Physics in ATLAS Run 2.* Georg-August-Universität Göttingen Summer Seminar Series. Göttingen, Germany. July 5, 2019.

Mentoring

External mentoring

Ph.D. students

- **Jingjing Pan,** Yale University, New Haven, Connecticut, USA. Supervisor: Keith Hamilton. Anticipated PhD 2024.
- **Emily Smith,** University of Chicago, Chicago, Illinois, USA. Supervisor: David Miller. Anticipated PhD 2023.
- **Christof Sauer,** Kirchoff-Institut für Physik, Physikalisches Institute, Heidelberg, Germany. Supervisor: Andre Schöning. Anticipated PhD 2023.

CERN Summer Students (B.Sc. Students)

- **Jonathan Barrett,** Memorial University of Newfoundland, Corner Brook, Newfoundland, Canada. Institute of Particle Physics CERN Summer Student, 2022. Co-supervised with Max Swiatlowski (TRIUMF).
    - ✴ Afterwards: MSc Student, Memorial University of Newfoundland.
- **Alejandro Reyes,** Cal State University, Fresno, California, USA. Cal State CERN Summer Student, 2019. Co-supervised with Michaela Quietsch-Maitland (Manchester).
- **Hector Delgado,** Cal State University, Los Angeles, California, USA. Cal State CERN Summer Student, 2019. Co-supervised with Michaela Quietsch-Maitland (Manchester).
    - ✴ Afterwards: PhD Candidate (Astrobiology), University of Washington.

Advising

External Ph.D. Examiner

- **Louis Ginabat,** *Étalonnage des jets et mesures précises de sections efficaces de production de jets avec les données de l'expérience ATLAS*. Directrise de thèse: Mélissa Ridel, co-encadrant de thèse: Bogdan Malescu. Laboratoire de Physique Nucléaire et de Hautes Energies (LPNHE), Paris, France. September 2023.

Teaching

University of Victoria

- **Physics 112, Introductory Physics II.** *Lab Instructor, Winter 2012.*
- **Physics 112, Introductory Physics I.** *Lab Instructor, Fall 2011.*

Acadia University

- **Math 2723, Intro. Differential Equations.** *Teaching Assistant, Winter 2010.*
- **Physics 1063, Gen. Physics II.** *Lab Assistant: Winter 2010.*
- **Math 1023, Intro. Calculus II.** *Studio Assistant: Fall 2010.*

- **Physics 1053, Gen. Physics I.** *Lab Assistant: Fall 2009 .*
- **Physics 1023, Intro. Physics II.** *Lab Assistant: Winter 2009.*
- **Physics Department Drop-In Help Centre.** *Tutor, Fall 2008.*

Service

External Service

- **Snowmass 2021 US HEP Community Planning Exercise**
  - **Liaison,** Snowmass Early-Career and Energy Frontier, *2020-2021.*
  - **Contact,** Snowmass Early-Career Inreach Group, *Fall/Winter 2020*

Workshop/Conference Organisation

- **International Advisory Committee,** BOOST 2024, Genoa, Italy. (July 2024)
- **Experimental Convener,** "Minimum Bias, Underlying Event & Monte Carlo Generators" Session, MPI@LHC 2023. Manchester, United Kingdom (November 2023)
- **Organising Committee**, ATLAS Hadronic Calibration Workshop 2023. Instituto de Física Corpuscular (IFIC). Valencia, Spain (September 2023)
- **International Advisory Committee,** BOOST 2023, East Bay, California, USA (July 2023)
- **Organising Committee,** First Lund Jet Plane Institute. CERN Theory Department (July 2023)
- **International Advisory Committee,** BOOST 2022, Hamburg, Germany (July 2022)
- **Local Organising Committee,** BOOST 2021, CERN (Online, July 2021)
- **Local Organising Committee,** ATLAS Hadronic Calibration Workshop 2019, University of Arizona. Tucson, Arizona, USA (October 2018)
- **Organising Committee,** ATLAS Hadronic Calibration Workshop 2018, Kirchoff-Institut für Physik, Physikalisches Institute. Heidelberg, Germany (September 2018)

Peer Review

- Physical Review Letters (PRL)
- Journal of High-Energy Physics (JHEP)
- European Journal of Physics C (EPJC)

Outreach

- **Videoconference Moderator,** IPPOG / QuarkNet Physics Masterclasses, 2020-2022
- **ATLAS Science Cafe & Walking Tour Guide,** CERN Open Days 2019
- **Guide,** TRIUMF + Emily Carr School of Art & Design Artists-In-Residence Visits, 2014, 2015
- **Volunteer Public Tour Guide,** TRIUMF, 2013-2015
- **Local Instructor,** TRIUMF IPPOG / QuarkNet Physics Masterclasses, 2014
- **Photographer,** TRIUMF Open House, 2013
- **Local Instructor,** University of Victoria IPPOG / QuarkNet Physics Masterclasses, 2012