Antonio Boveia
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Appointments

THE OHIO STATE UNIVERSITY

Associate Professor, Physics Department & Center for Cosmology and AstroParticle Physics — 2021–present

Assistant Professor, Physics Department & Center for Cosmology and AstroParticle Physics — 2016–2021

CERN, EXPERIMENTAL PHYSICS DIVISION

Marie Skłodowska-Curie COFUND Fellow — 2014–2016

THE UNIVERSITY OF CHICAGO

Postdoctoral Scholar, the Enrico Fermi Institute — 2009–2014

Education

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Ph.D. and M.S. in Physics — 2001–2008
Thesis: "A Search For Resonant Z Pair Production," advised by David Stuart

UNIVERSITY OF IOWA

B.S. in Physics, Mathematics, and Astronomy, summa cum laude — 1997–2001

Leadership Positions

ATLAS COLLABORATION

ATLAS TDAQ Upgrade Trigger Level Analysis Task Force — 2025–2026

ATLAS Exotics Roadmap Co-Editor — 2025–2026

TDAQ Hardware Track Trigger coordinator for the HL-LHC upgrade — 2020–2022

Lead editor of the Technical Design Report on the High Granularity Timing Detector for the HL-LHC upgrade — 2018–2019

Trigger/DAQ/Luminosity coordinator of the High Granularity Timing Detector — 2017–2019

TDAQ FTK-HLT integration coordinator	2018–2019
LHC Dark Matter Working Group convener	2015–2018
ATLAS Astroparticle Forum convener	2015–2017
ATLAS/CMS Dark Matter Forum convener	2014–2015
Exotics Jets+X physics analysis subgroup convener	2012–2014

APS

Snowmass 2021 Energy Frontier Collider Dark Matter convener	2021–2022
Snowmass 2021 Energy Frontier – Cosmic Frontier Liason	2021–2022

CDF COLLABORATION

Data quality monitoring convener for the silicon tracker	2005

Major Research Funding

DOE Office of High Energy Physics, *"Research in Elementary Particle Physics, ATLAS"* (with one co-PI). $1,890,000.	2024–2028
DOE Office of High Energy Physics, *"Research in Elementary Particle Physics, ATLAS"* (with two co-PIs). $2,280,000.	2020–2024
DOE Office of High Energy Physics, *"Research in Elementary Particle Physics, ATLAS"* (with three co-PIs). $1,680,000.	2017–2020

Awards, Fellowships, and Honors

2025 Breakthrough Prize in Fundamental Physics *laureate along with the ATLAS, CMS, ALICE and LHCb Collaborations*	2025
Physics Undergraduate Teaching Award, Ohio State	2021
The 2019 High Energy and Particle Physics Prize *awarded to the CDF and D0 Collaborations by the European Physical Society*	2019
Marie Skłodowska-Curie COFUND Fellowship, CERN	2014–2016
The 2013 High Energy and Particle Physics Prize *awarded to the ATLAS and CMS Collaborations by the European Physical Society*	2013
Outstanding Teaching Assistant, UCSB Physics Department.	2003
James A. Van Allen Award, University of Iowa	2001
Phi Beta Kappa junior election, University of Iowa	2000
Stevens Phi Beta Kappa Scholarship, University of Iowa	2000

Waldo Edward and Martha Althaus Smith Award, University of Iowa 2000

Selected Publications

For a full list of my publications, see INSPIRE (link; 1,814 publications, h-index: 221, avg. 128 citations/paper). The following list contains my principal publications.

ATLAS Collaboration, *Search for electroweak-scale dijet resonances using Trigger-Level Analysis with the ATLAS Detector in 132/fb of pp collisions at √s=13 TeV* — Phys. Rev. D 112 (2025) 092015

ATLAS Collaboration, *The performance of missing transverse momentum reconstruction and its significance with the ATLAS detector using 140/fb of √s=13 TeV pp collisions* — European Physical Journal C 85 (2025) 606

A. Boveia, et al., *Snowmass 2021 cross frontier report: Dark matter complementarity* — SciPost Phys. Comm. Rep. 7 (2025)

ATLAS Collaboration, *Search for low-mass resonances decaying into two jets and produced in association with a photon or a jet at √s=13 TeV with the ATLAS detector* — Phys. Rev. D 11 (2024) 032002

ATLAS Collaboration, *The ATLAS Trigger System for LHC Run 3 and Trigger performance in 2022* — J. Inst. 19 (2024) P06029

ATLAS Collaboration, *Search for single vector-like B quark production and decay via $B \to bH(b\bar{b})$ in pp collisions at √s=13 TeV with the ATLAS detector* — J. High Energ. Phys. 2023 (2023) 168

H. Abidi, et al., *Charged particle tracking with machine learning on FPGAs* — arXiv:2212.02348 (2022)

M. Narain, et al., *The future of US particle physics—the Snowmass 2021 Energy Frontier report* (as co-editor) — arXiv: 2211.11084 (2022)

A. Boveia, et al., *Snowmass 2021 dark matter complementarity report* — arXiv: 2211.07027 (2022)

T. Bose, et al., *Report of the topical group on physics beyond the Standard Model at the Energy Frontier for Snowmass 2021* — arXiv: 2209.13128 (2022)

A. Boveia, et al., *Summarizing experimental sensitivities of collider experiments to dark matter models and comparison to other experiments* — arXiv: 2206.03456 (2022)

A. Albert, et al., *Displaying dark matter constraints from colliders with varying simplified model parameters* — arXiv:2203.12035 (2022)

A. Boveia, et al., *DarkFlux: A new tool to analyze indirect-detection spectra of next-generation dark matter models* — Phys.Dark Univ. 36 (2022) 101012

ATLAS Collaboration, *Technical design report for the Phase-II upgrade of the ATLAS trigger and data acquisition system — Event Filter tracking amendment* — ATLAS-TDR-029-ADD-1 (2022) CERN-LHCC-2022-004

A. Aarrestad, et al., *The Dark Machines anomaly score challenge: benchmark data and model independent event classification for the Large Hadron Collider* — SciPost Phys. 12 (2022) 043

ATLAS Collaboration, *Search for new phenomena in events with an energetic jet and missing transverse momentum in pp collisions at √s=13 TeV with the ATLAS detector* — Phys. Rev. D 103 (2021) 112006

ATLAS Collaboration, *The ATLAS Fast TracKer system.* J. Instr.16 (2021) P07006

ATLAS Collaboration, *Technical design report: a High-Granularity Timing Detector for the ATLAS Phase-II upgrade* (editor) ATLAS-TDR-031 (2020) CERN-LHCC-2020-007

T. Abe et al., *LHC Dark Matter Working Group: next-generation spin-0 dark matter models* Phys.Dark Univ. 27 (2020) 100351

A. Boveia et al., *Recommendations of the LHC Dark Matter Working Group: comparing LHC searches for heavy mediators of dark matter production in visible and invisible decay channels* Phys.Dark Univ. 27 (2020) 100377

A. Boveia et al., *Recommendations on presenting LHC searches for missing transverse energy signals using simplified s-channel models of dark matter* Phys.Dark Univ. 27 (2020) 100365

D. Abercrombie et al., *Dark matter benchmark models for early LHC Run-2 searches: report of the ATLAS/CMS Dark Matter Forum* (editor) Phys. Dark Univ. 27 (2020) 100371

ATLAS Collaboration, *Operation of the ATLAS trigger system in Run 2* J. Inst. 15 (2020) P10004

ATLAS Collaboration, *Constraints on mediator-based dark matter and scalar dark energy models using √s=13 TeV collision data collected by the ATLAS detector* J. High Energy Phys. 05 (2019) 142

ATLAS Collaboration, *Search for low-mass resonances decaying into two jets and produced in association with a photon using pp collisions at √s=13 TeV with the ATLAS detector* Phys. Lett. B 795 (2019) 56

A. Boveia and C. Doglioni, *Dark matter searches at colliders* Ann. Rev. of Nucl. and Part. Sci. Vol. 68 (2018) 429–459

ATLAS Collaboration, *Search for low mass dijet resonances using trigger-level jets with the ATLAS detector in LHC pp collisions at √s = 13 TeV* Phys. Rev. Lett. 121 (2018) 081801

ATLAS Collaboration, *Technical proposal: a High-Granularity Timing Detector for the ATLAS Phase-II Upgrade* CERN-LHCC-2018-023 (2018)

ATLAS Collaboration, *Search for dark matter and other new phenomena in events with an energetic jet and large missing transverse momentum using the ATLAS detector* J. High Energy Phys. 1801 (2018) 126

J. Albrecht et al., *HEP community white paper on software trigger and event reconstruction* arXiv:1802.08638 (2018)

J. Albrecht et al., *A roadmap for HEP software and computing R&D for the 2020s* arXiv:1712.06982 (2017)

ATLAS Collaboration, *Search for new phenomena in dijet events using 37/fb of pp collision data collected at √s=13 TeV with the ATLAS detector* Phys. Rev. D 96 (2017) 052004

ATLAS Collaboration, *Performance of the ATLAS trigger system in 2015* Eur. Phys. J. C 77 317 (2017)

ATLAS Collaboration, *Search for new phenomena in final states with an energetic jet and large missing transverse momentum in pp collisions at √s=13 TeV using the ATLAS detector* Phys. Rev. D 94 (2016) 032005

T. Golling et al., *Physics at a 100 TeV pp collider: beyond the Standard Model phenomena* arXiv:1606.00947 (2016)

ATLAS Collaboration, *Search for new phenomena in dijet mass and angular distributions from pp Collisions at √s = 13 TeV with the ATLAS Detector* — Phys. Lett. B754 (2016) 302–322

J. Abdallah et al., *Simplified models for dark matter Searches at the LHC* — Phys.Dark Univ. 9-10 (2015) 8–23

ATLAS Collaboration, *Search for new phenomena in dijet angular distributions in proton-proton collisions at √s=8 TeV measured with the ATLAS Detector* — Phys. Rev. Lett. 114 (2015) 221802

ATLAS Collaboration, *Search for new phenomena in Final states with an energetic jet and large missing transverse momentum in pp collisions at √s=8 TeV with the ATLAS Detector* — Eur. Phys. J. C75 7 (2015) 299

ATLAS Collaboration, *Search for new phenomena in the dijet mass distribution using 20/fb of pp collisions √s = 8 TeV with the ATLAS Detector* — Phys. Rev. D91 (2015) 052007

ATLAS Collaboration, *Search for new phenomena in photon+jet events collected in proton-proton collisions at √s = 8 TeV with the ATLAS Detector* — Phys. Lett. B728 (2013) 562–578

T. Altonen et al., *Operational experience, improvements, and performance of the CDF Run II Silicon Vertex Detector* — Nucl. Inst. Meth. A 729 (2013) 153–181

A. Boveia, *Observation of a new resonance at ATLAS (refereed proceedings of BEACH 2012)* — Nucl. Phys. B Suppl. 233 (2012) 34–39

ATLAS Collaboration, *Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS Detector at the LHC* — Phys. Lett. B716 (2012) 1–29

ATLAS Collaboration, *Search for the Standard Model Higgs boson in the* $H \to WW^* \to \ell\nu\ell\nu$ *decay mode with 4.7/fb of ATLAS data at √s = 7 TeV* — Phys. Lett. B716 (2012) 62–81

ATLAS Collaboration, *Search for production of resonant states in the photon-jet mass distribution using pp collisions at √s = 7 TeV collected by the ATLAS Detector* — Phys. Rev. Lett. 108 (2012) 211802

A. Annovi et al., *The FastTracKer real time processor and its impact on muon isolation, tau, and b-jet online selections at ATLAS* — IEEE Trans. Nucl. Sci. 59 (2012) 348

T. Aaltonen et al. (CDF Collaboration), *Search for new heavy particles decaying to* $ZZ \to \ell\ell\ell\ell, \ell\ell jj$ *in pp collisions at √s = 1.96 TeV* — Phys. Rev. D 83 (2011) 112008

T. Aaltonen et al. (CDF Collaboration), *Search for new heavy particles decaying to* $ZZ \to eeee$ *in pp collisions at √s = 1.96 TeV* — Phys. Rev. D 78 (2008) 012008

A. Boveia et al., *Chiral supergravitons interacting with a 0-Brane N-Extended NSR Super-Virasoro Group* — Phys. Lett. B 529 (2002) 222–232

Mentored Publications

The following list contains publications from members of my my research group under my supervision for which I declined formal authorship.

C. Agapopoulou, et al. (including Tolley and Reynolds), *Performance in beam tests of irradiated Low Gain Avalanche Detectors for the ATLAS High Granularity Timing Detector* — JINST 17 (2022) P09026

Conference, Seminar, and Invited Presentations

Discussion Panel on Anomaly Detection in New Physics Searches, Aurelio Juste, Steven Schramm, Ben Nachman, Cari Cesarotti, Tilman Plehm, Antonio Boveia, Jennifer Curran, Nicholas Luongo, Bruna Pascual, Vilius Cepatis, ATLAS Exotics Workshop, Bologna, Italy, 24 October 2024.

Trigger Level Tracking With Neural Networks on Heterogeneous Computing Systems, Mini-workshop on Real time tracking: triggering events with tracks (Connecting the Dots 2023), Toulouse, France, 13 October 2023 (presented by Alex Gekow).

Real Time Track Finding using Machine Learning at the HL-LHC, US ATLAS Summer Workshop 2023, New Haven, CT, 19 July 2023 (presented by Alex Gekow).

Hough Transform pattern recognition for track finding at the ATLAS experiment at the LHC, APS DPF 2022, New York, NY, 10 April 2022 (presented by Natalie Harrison).

Machine learning based tracking at the trigger level (poster), APS DPF 2021 (virtual), 19 April 2021 (presented by Haider Abidi).

Autoencoders for compression, APS Snowmass 2021, Snowmass Computational Frontier Machine Learning Group, 17 November 2020.

Hardware Track Trigger, LHCC Phase 2 Upgrade Group Review of the ATLAS TDAQ Upgrade, 30 October 2020.

Challenges and opportunities for trigger-level analyses, APS Snowmass 2021, Snowmass Community Planning Meeting, Collider Data Analysis Strategies, 6 October 2020.

Dark matter summary plots—high-energy collider perspective, APS Snowmass 2021, EF10 DM@Colliders, topical meeting on LOIs on complementarity and facilities/experiments, 23 September 2020 (presented by B. Gao).

Plans for s-channel simplified models summary plots,, APS Snowmass 2021, EF10 DM@Colliders, topical meeting on DM simplified models, 18 June 2020 (presented by B. Gao).

Trigger level analysis technique in ATLAS for Run 2 and beyond, The 24th International Conference on Computing in High-Energy and Nuclear Physics, Adelaide, Australia, 5 November 2019.

The ATLAS Hardware Track Trigger design towards first prototypes, The 24th International Conference on Computing in High-Energy and Nuclear Physics, Adelaide, Australia, 5 November 2019.

A High-Granularity Timing Detector for the Phase-II upgrade of the ATLAS Calorimeter system: detector concept, design, and readout, The 28th International Workshop on Vertex Detectors, Lopud Island, Croatia, 16 October 2019.

Searches for dark matter mediators with dijet final states in pp collisions at √s = 13 TeV with the ATLAS detector at the LHC, APS April Meeting 2019, Denver, Colorado, 16 April 2019 (presented by Kathleen Whalen).

Is there Dark Matter at the LHC?, CCAPP Seminar, Columbus, Ohio, 23 April 2018.

A Search for New Physics using Trigger-Level Analysis with ATLAS, APS April Meeting 2018, Columbus, Ohio, 16 April 2018 (presented by Bryan Reynolds).

(In-)Direct Searches Complementarity + Interpretation (convener summary), DM@LHC 2018, Heidelberg, Germany, 6 April 2018.

The LHC Dark Matter Working Group, TeV Particle Astrophysics 2017, Columbus, Ohio, 7–14 August 2017.

Where is Dark Matter at the LHC?, Karlsruhe Institute of Technology, Karlsruhe, Germany, 22 June 2017.

Where is Dark Matter at the LHC?, Johns Hopkins University & University of Maryland Joint HEP Seminar, Baltimore, Maryland, 12 April 2017.

Dark Matter at the LHC, invited talk at Coordination Panel for Advanced Detector R&D, Caltech, 8–10 October 2016.

Dark Matter Searches at the LHC, Dark Interactions 2016, Brookhaven National Lab, 4–7 October 2016.

Dark Matter Searches at the LHC, PIKIO #2, Columbus, Ohio, 24 September 2016.

Searches for Dark Matter at ATLAS and CMS, invited plenary at SUSY 2016, Melbourne, Australia, 3–8 July 2016.

Dijet searches at trigger level; low mass; other opportunities (co-speaker), Experimental Challenges for the LHC Run II, Kavli Institute for Theoretical Physics, 11 May 2016.

Searches for Dark Matter at ATLAS, CERN LHC Seminar, CERN, 26 April 2016.

Exotics DM and Jet-related Searches, JSPS/Zuno-Junkan Workshop, University of Tokyo, 24–25 March 2016.

Searching in the Dark at Hadron Colliders, colloquium, The Ohio State University, 22 February 2016.

Future 100 TeV detectors/experiments for DM studies, Dark Matter at a Future Hadron Collider Workshop, Fermilab, 4–6 December 2015.

Jets and Dark Matter, HEP Seminar, University of California at Santa Barbara, 18 November 2015.

Searches for Dark Matter at ATLAS, Joint Experimental-Theoretical Seminar, Fermilab, 6 November 2015.

Dijet and dark matter benchmarks, FCC-hh BSM group, CERN, 30 October 2014.

Searching in the Dark at Hadron Colliders, HEP Seminar, University of Cambridge, 2 October 2014.

Searches for New Exotic Phenomena in Hadronic Final States at ATLAS, HEP Seminar, University of Massachussets, Amherst, 29 April 2014.

Searches for Physics Beyond the Standard Model (non-SUSY) at ATLAS, La Thuile 2014, 23 February–1 March 2014.

Searches for Dark Matter at Colliders: Experiment, ATLAS Run II Exotics Workshop, 7 February 2014.

Overview of Exotics Searches at the LHC (public plenary session), US ATLAS Week, 15 July 2013.

Searching for Dark Matter at the LHC, HEP Seminar, University of Chicago, 20 May 2013.

Searching for Dark Matter at the LHC, HEP Seminar, University of Texas at Austin, 15 April 2013.

Recent Searches for Exotic States and Physics Beyond the Standard Model, DESY Hamburg/Zeuthen, 12/13 February 2013.

Lessons Learned from Searches in Hadronic Final States, US ATLAS Hadronic Final State Forum, 3 December 2012.

The Higgs Search at ATLAS, HEP Seminar, Iowa State University, 19 September 2012.

The Higgs Search at ATLAS, Physics Colloquium, the University of Iowa, 17 September 2012.

Observation of a New Narrow Resonance at ATLAS, The Tenth International Conference on Hyperons, Charm, and Beauty Hadrons (BEACH 2012), 22–27 July 2012.

Higgs Searches at ATLAS and *New Ways of Searching for New Physics at the LHC*, LHC Physics Center at Fermilab Visitor of the Week, 8–11 May 2012.

WW/ZZ Searches at the LHC, Chicago 2012 Workshop on LHC Physics, 2–4 May 2012.

Jet+X Searches at ATLAS, SuSy, Exotics, and Reaction to Confronting the Higgs (SEARCH 2012), 17–19 March 2012.

The Higgs Search at ATLAS, HEP Seminar, University of Chicago, 23 January 2012.

$H \to WW^* \to \ell\nu\ell\nu$*: low mass optimization*, LBNL Jamboree on Higgs Searches, 24–26 October 2011.

Non-SUSY Searches at the Tevatron, XLIIIth Rencontres de Moriond, QCD and High Energy Interactions, 14–21 March 2009.

Searches for Anomalous ZZ at CDF, HEP Seminar, University of Illinois at Urbana-Champaign, 2 March 2009.

Searches for Anomalous ZZ at CDF, HEP Seminar, University of Chicago, 23 February 2009.

Radiation Damage to the CDF Silicon Detectors, Fermilab Directorate All Experimenters Meeting, 1 August 2005.

Status and Performance of the CDF Run II Silicon Detector, EPS 2005, 21–27 July 2005.

Teaching and Mentoring

COURSES

Honors Advanced Electricity and Magnetism II (Spring 2026).

Honors Intermediate Electricity and Magnetism I (Autumn 2025).

Intermediate Mechanics II (Spring 2025).

Intermediate Mechanics II (Spring 2024).

Intermediate Mechanics II (Spring 2023).

Honors E&M, Waves and Quantum Mechanics, Thermodynamics (Spring 2022).

Honors E&M, Waves and Quantum Mechanics, Thermodynamics (Spring 2021).

Mechanics, Thermodynamics, Waves (Spring 2020).

Experimental Physics Instrumentation and Data Analysis Lab (Spring 2019).

Mechanics, Thermodynamics, Waves (Spring 2018) .

Experimental Physics Instrumentation and Data Analysis Lab (Fall 2017).

CURRENT ADVISEES/MENTEES

Dr. Marco Montella, 2021–.

Osip Surdutovich, 2024– (as Ph.D. candidacy advisor).

Jacob Balek, 2024– (undergraduate).

FORMER ADVISEES/MENTEES

Postdoctoral advisees

Dr. Emma Tolley, 2017–2020. Now an Assistant Professor of Physics at EPFL, Laussane, Swizterland and group leader at EPFL's Scientific IT & Application Support (SCITAS).

Doctoral students (as dissertation advisor)

Alex Gekow, Ph.D. 2025. *The ATLAS Trigger: A Search for Electroweak Scale Di-jet Resonances in Association with an Initial State Photon Using Trigger Level Objects & Charged Particle Tracking with Neural Networks at Trigger Level*. Now a data scientist at Morse CORP.

Natalie Harrison, Ph.D. 2024. *A search for low mass resonances decaying into two jets and produced in association with a photon and development of pattern recognition algorithms for identifying track candidates in the ATLAS ITk detector.* Now a postdoc at the University of Virginia.

Bryan Reynolds, Ph.D. 2021. *ATLAS jet trigger performance in Run 2 and searching for new physics with trigger-level jets*. Now an Electromagnetic Engineer III at Remcom.

Doctoral students (as dissertation committee member)

Madhur Mehta, 2025. *Through the Horizon and Back: Lifting the Veil on Black Hole Thermodynamics.*

Robert Kent, 2025. *Qubit State Discrimination with Next-Generation Reservoir Computing.*

Mostofa Hisham, 2024. *Similarity Renormalization Group Approach to Low-Energy Nuclear Reactions*.

Po Wen Chang, 2024. *Echoes of the Cosmic Collapse: Unraveling Neutrino Mysteries with Supernovae*.

Ben Cote, 2023. *A Search for Long-Lived Neutral Particles Decaying to Oppositely Charged Lepton Pairs in pp Collisions at √s = 13 TeV with the ATLAS Detector.*

Kevin Ingles, 2023. *Charm-Meson Molecules in an Expanding Hadron Gas.*

Estefany Nunez Ornelas, 2023. *Searches for displaced leptons in proton-proton collisions at √s = 13 TeV.*

Kai Wei, 2022. *A Search for New Physics with Disappearing Track and The HL-LHC Upgrade for Compact Muon Solenoid.*

Humberto Gilmer, 2022. *Supersymmetric Phenomenology & Rare Signals in Colliders*.

Noeloikeau Charlot, 2022. *Applications of Complex Network Dynamics in Ultrafast Electronics*.

Daniella Roberts, 2022. *Searching for Satellite Galaxy Populations of Low-mass Host Galaxies.*

Julie Rolla, 2021. *Applications of Evolutionary Algorithms in Ultra-High Energy Neutrino Astrophysics*.

Dmitry Shcherbakov, 2021. *Electronic transport properties of novel two-dimensional materials: Chromium Iodide and Indium Selenide*.

Christopher Cappiello, 2021. *Constraints on Strongly Interacting Dark Matter.*

Liping He, 2021. *Triangle Singularities in the Production of the X(3872) Resonance.*

Keith McBride, 2021. *Cosmic Ray Instrumentation and Simulations*.

Jiawei Yang, 2021. *Electronic Properties of Atomically Thin Black Phosphorus*.

Khalida Hendricks, 2019. *Jets + Missing Energy Signatures At The Large Hadron Collider*.

Graduate student mentees (as project advisor)

Jessica Miears (2024–2025).

Brady Hood (2016–2017).

Masters/bachelors thesis and undergraduate project advisees

Jayde Spiegel, 2023–2025. *Event Cleaning for Trigger Level Analysis at the ATLAS Experiment* (poster) and undergraduate research project on noise bursts in the ATLAS calorimeter for Trigger-Level Analysis. Now Ph.D. student at UC Santa Cruz.

Sam Bellman, 2022–2024. Undergraduate honors thesis: *Investigating the Differences Between Truth Level and Reconstructed Particles in Simulations of the ATLAS Detector*. Now Ph.D. student at the University of Washington.

Omar Kotrach, 2022–2024. Undergraduate honors thesis: *Isolation studies with trigger level photons and jets with the ATLAS detector in pp collisions at* $\sqrt{s} = 13.6$ *TeV* and ATLAS Open Data: Discovering the Z and Higgs Bosons. Now Ph.D. student at UC San Diego.

Sam Roberts, 2019–2021. *Autoencoder data compression with PyTorch;*. Now Ph.D. student at UC Santa Cruz.

Boyu Gao, 2019–2021. Undergraduate honors thesis: *Comparing experimental sensitivities of Dark Matter experiments*. Now Ph.D. student at Duke University.

Love Kildetoft, 2021. Lund University bachelors thesis (as co-supervisor): *Evaluation of float-truncation based compression techniques for the ATLAS jet trigger*.

Jessica Lastow, 2021. Lund University masters thesis (as co-supervisor): *Investigation of Autoencoders for Jet Images in Particle Physics*.

Eric Wallin, 2020. Lund University bachelors thesis (as co-supervisor): *Tests of Autoencoder Compression of Trigger Jets in the ATLAS Experiment*.

Eric Wulff, 2020. Lund University masters thesis (as co-supervisor): *Deep Autoencoders for Compression in High Energy Physics*.

Isabelle John, 2019. Lund University masters thesis (as co-supervisor): *Study of Dark Matter Models in Astrophysics and Particle Physics*.

Summer student and other undergraduate advisees

Rishivarshil Nelakurti, 2024–2025. US ATLAS SUPER award, *Recasting the ATLAS ISR+Dijet Trigger-Level Analysis in RIVET.*

Nick Bagby, 2024.

Josie Rose, 2023. Adapting autoencoder networks to an Alveo U250 FPGA.

Honey Gupta, 2020. Google Summer of Code (as co-supervisor), *Deep-compression for High Energy Physics data: Google Summer of Code '20*.

Santhusht Prasad, 2020.

Ari Josephson, 2018–2019.

Joshua Ramette, 2016. CERN/Michigan REU Summer Student supervisor, *Improving ATLAS Jet Measurements and Searches with Particle Information* (Hillsdale College). Now Ph.D. MIT ‘24 and founder and CEO of Undermind.AI.

Armin Fehr, 2016. CERN Summer Student, *Triggering on W, Z Boson Jets* (Univ. Bern).

Zitan Guo, 2015. CERN Summer Student, *Simulation, selection and reconstruction of dark Z bosons decaying into collimated leptons in proton-proton collisions at √s=13 TeV with the ATLAS detector* (Chung Chi College, Hong Kong).

Roumaissa Zebida, 2015. CERN Summer Student, *A trigger for selecting long-lived particle decays in the ATLAS detector and its improvements for the LHC Run-2* (Lycée and University of Oran, Algeria).

Navaratnam Navarajacumaran, 2015. CERN Summer Student, *Analyzing the Quality of Dijet Data* (University of Yamanashi, Japan).

Kimmo Kotajarvi, 2005. Fermilab summer student (University of Helsinki). Silicon tracker data quality monitoring.

Juha Laakko, 2005. Fermilab summer student (University of Helsinki). Silicon tracker data quality monitoring.

Professional Service

APS Career Mentoring Fellow, 2024–2026.

Reviewer, NSF, DOE, European Research Council.

Referee, Physical Review Letters, Journal of High Energy Physics, The European Physical Journal C, Journal of Instrumentation.

Organizing committee, *ATLAS High-level-synthesis Education And Development (AHEAD) bootcamp*, Brookhaven National Lab, June 9–13, 2025.

CERN Courier article on ATLAS Trigger Level Analysis, January 2026.

Session convener, *Alternative workflows (AD, TLA) + panel discussion, ATLAS Exotics Workshop*, Bologna, Italy, 2024.

Collider Dark Matter (EF10) topical group convener and energy frontier–cosmic frontier liaison, Snowmass, 2021–2022.

Session convener, *Collider Search I*, DM@LHC 2019, Seattle, Washington, August 2019.

"Birds of a Feather" session organizer: *Tracking at the trigger level (real-time tracking) and Triggers & Real-time Analysis,* CHEP 2019, Adelaide, Australia, 2019.

2020 Update of the European Strategy for Particle Physics physics briefing book, 2019) [minor contributions, c.f. ref. 585].

LHC Dark Matter Working Group convener, 2015–2018.

Session chair, *Dark Matter*, US ATLAS Summer Workshop 2018, Pittsburgh, Penn., 2018.

Session convener, *Session D09: Beyond Standard Model Physics II*, APS April Meeting, Columbus, Ohio, 2018.

Session convener, *(In-)direct searches complementarity + interpretation*, DM@LHC 2018, Heidelberg, Germany, 2018.

Workshop convener, *Dark Matter Complementarity*, TeV Particle Astrophysics (TeVPA), 2017.

Organizing committee, *Future of collider searches for Dark Matter at the LHC Physics Center*, Fermilab, 2017.

Co-author, *If You Can't Find Dark Matter, Look First for a Dark Force,* Nautilus Magazine, Februrary 2017.

Local Organizing Committee, 2nd PIKIO Meeting, 2016.

Discussion convener, *Dark Matter at a Future Hadron Collider Workshop*, Fermilab, 4–6 December 2016.

Bloc co-leader, *Dark Matter*, Experimental Challenges for the LHC Run II (experlhc16), Kavli Institute for Theoretical Physics, May 2016.

Organizing Committee, DM@LHC 2016, Amsterdam, 2016.

CERN Courier ATLAS dark matter articles, March 2015 & May 2016.

ATLAS/CMS Dark Matter Forum convener, 2014–2015.

ATLAS Exotics Group Dark Matter Theory Liason, 2014–2016.

ATLAS Jet+X (JDM) co-convener, 2012–2014.

Organizing Committee, ATLAS Hadronic Calibration Workshop, September 2013.

Organizing Committee, Chicago Workshop for LHC Physics, November 2012.

Interviewed by Sharon Gaudin for Computerworld/Macworld/PCWorld, *Particle discovery is game changer for understanding the universe*, July 2012.

Interviewed by Joanna Carver, Medill School of Journalism, Northwestern University, for *What is the Higgs? It matters to matter*, August 2012.

Interviewed by Geoff Brumfiel, Nature, for *High-energy physics: Down the petabyte highway*, January 2011.

Organizer, Enrico Fermi Institute High Energy Physics Lunch Seminars, 2010–2011.

Tour guide, CDF Experiment, 2006–2007.

Volunteer, Iowa Robotic Observatory, 1999–2001.

Ohio State University

Center for Cosmology and AstroParticle Physics (CCAPP) Science Board, 2022–2026.

Department of Physics Undergraduate Studies committee, Computational Integrate co-lead, 2024–2026. Sophomores Course subcommittee chair, 2024–2025.

Department of Physics faculty search commitees, 2021–2022, 2022–2023, 2023–2024, 2025–2026.

Department of Physics panel session on applications to the NSF Graduate Research Fellowship, 14 August 2025.

Ohio State Society of Physics Students presentations, 8 April 2025, 11 April 2023.

College of Arts and Sciences, advisory committee to the dean to select the chair of the Physics Department, 2019–2020.

Ohio State University Postdoctoral Advisory Council (PAC) panelist, 2016.