Tony Menzo

University of Cincinnati — Geology/Physics Building
345 Clifton Ct, Cincinnati, OH 45220

Email: menzoad@mail.uc.edu
INSPIRE: https://inspirehep.net/authors/2049582

Current position

January 2020 – Present — *PhD candidate*, University of Cincinnati
Advisor: Jure Zupan, PhD

Education

2014 – 2019 — Bachelor of Arts and Sciences in Physics, The Ohio State University
Minors in Earth Science (Geophysics) and Philosophy
Mentor: Stuart Raby, PhD

Areas of Specialization and Interest

High Energy Physics — Phenomenology
Model building, computational physics (machine learning, optimal transport), hadronization, rare lepton decays, effective field theory, proton decay, hierarchy problem, gauge/gravity duality, cosmology

Publications/Preprints

November 2024 — Nick Heller, Phil Ilten, **Tony Menzo**, Stephen Mrenna, Benjamin Nachman, Andrzej Siodmok, Manuel Szewc, Ahmed Youssef, "Rejection Sampling with Autodifferentiation – Case study: Fitting a Hadronization model" Submitted to Physical Review D. [arXiv:2411.02194]

September 2024 — Christian Bierlich, Phil Ilten, **Tony Menzo**, Stephen Mrenna, Manuel Szwec, Ahmed Youssef, Jure Zupan, "Describing Hadronization via Histories and Observables for Monte Carlo Event Reweighting." Submitted to SciPost Physics. [arXiv:2410.06342]

July 2024 — Patrick J. Fox, Matheus Hostert, **Tony Menzo**, Maxim Pospelov, Jure Zupan, "Muon-induced baryon number violation." Phys.Rev.D 110 (2024) 7, 075015. [arXiv:2407.03450]

June 2024 — Wick Haxton, Kenneth McElvain, **Tony Menzo**, Evan Rule, Jure Zupan, "Effective theory tower for $\mu \to e$ conversion." JHEP 11 (2024) 076. [arXiv:2406.13818]

November 2023 — Christian Bierlich, Phil Ilten, **Tony Menzo**, Stephen Mrenna, Manuel Szwec, Ahmed Youssef, Jure Zupan, "Towards a data-driven model of hadronization using normalizing flows." SciPost Physics 17.2 (2024): 045. [arXiv:2311.09296]

August 2023 — Christian Bierlich, Phil Ilten, **Tony Menzo**, Stephen Mrenna, Manuel Szwec, Ahmed Youssef, Jure Zupan, "Reweighting Monte Carlo Predictions and Automated Fragmentation Variations in Pythia 8." SciPost Physics 16.5 (2024): 134. [arXiv:2308.13459]

June 2023 — Matheus Hostert, **Tony Menzo**, Maxim Pospelov, Jure Zupan, "New physics in multi-electron muon decays." Journal of High Energy Physics 2023.10 (2023): 1-22. [arXiv:2306.15631]

January 2023 — Adam Davis, **Tony Menzo**, Ahmed Youssef, Jure Zupan, "The earth mover's distance as a measure of CP violation." Journal of High Energy Physics 2023.6 (2023): 1-42. [arXiv:2301.13211]

April 2022 — Reuven Balkin, Eric Madge, **Tony Menzo**, Gilad Perez, Yotam Soreq, Jure Zupan, "On the implications of positive W mass shift." Journal of High Energy Physics 2022.2204.05992 (2022): 1-19. [arXiv:2204.05992]

March 2022 — Phil Ilten, **Tony Menzo**, Ahmed Youssef, Jure Zupan, "Modeling hadronization using machine learning". SciPost Physics, 14(3), 027 (2023). [arXiv:2203.04983]

In preparation:

- "Dark matter direct detection with flavor violation"
- "A flavorful cascade for low-scale leptogenesis"
- "Breeding scalars at nuclear fusion reactors"

Awards

October 2024 – August 2025 — URA Visiting Scholar's Program awardee, Fermi National Accelerator Laboratory, *"Time-dependent signals at the intensity frontier"* (1 month)

April 2024 – July 2024 — URA Visiting Scholar's Program awardee, Fermi National Accelerator Laboratory, *"Exploring exotic signatures at Mu2e"* (3 months)

October 2023 – April 2024 — DOE SCGSR fellowship recipient, Lawrence Berkeley National Lab, *"Connecting small and large scales at muon-to-electron conversion experiments"* (6 months)

January 2023 — University of Cincinnati Physics poster competition, 1st place

April – August 2022 — Technion - Israel Institute of Technology visiting research student: Sandwich Scholarship (3 months)

Presentations

November 2024 — UMD Theory Seminar, University of Marlyand, Annapolis, MD
November 2024 — Rutgers High Energy Theory Seminar, Rutgers University, Piscataway, NJ
November 2024 — Cornell LEPP Theory Seminar, Cornell University, Ithaca, NY
October 2024 — SLAC Theory Seminar, SLAC, Menlo Park, CA
October 2024 — UCSD Particle Theory Seminar, UC San Diego, San Diego, CA
October 2024 — UCSB HEP-HEX Seminar, UC Santa Barbara, Santa Barbara, CA
September 2024 — NuFact 2024, Argonne National Laboratory, Chicago, IL
May 2024 — Phenomenology 2024, University of Pittsburgh, Pittsburgh, PA
February 2024 — Berkeley 4D Seminar, UC Berkeley, Berkeley, CA
October 2023 — ATLAS Theory Lunch Seminar, LBNL, Berkeley, CA
September 2023 — IAIFI Journal Club, MIT, Boston, MA
May 2023 — Phenomenology 2023, University of Pittsburgh, Pittsburgh, PA
April 2023 — PIKIMO conference, Ohio State University, Columbus, OH
March 2023 — DIS2023 workshop, Michigan State University, East Lansing, Michigan
November 2022 — QCD@LHC workshop, Paris-Saclay University, Orsay, France
November 2022 — PIKIMO conference, University of Cincinnati, Cincinnati, OH
October 2022 — AI4EIC Workshop, online

July 2022 — Rethinking beyond the Standard Model summer school, Institute for Scientific Studies, Cargese, Corsica

May 2022 — Technion HEP Journal Club, Technion - Israel Institute of Technology, Haifa, Israel

Workshops/Schools

November 2023 — Theory Meets Experiments: The high intensity frontier of particle physics, Galileo Galilei Institute, Florence, Italy

March 2023 — DIS2023 workshop, Michigan State University, East Lansing, Michigan

June 2023 — Holography@25, ICTP, Sao Paulo, Brazil

July 2022 — Rethinking beyond the Standard Model Summer school, Institute for Scientific Studies, Cargese, Corsica

November 2022 — QCD@LHC, Paris-Saclay University, Orsay, France

October 2021 — School on Superstring Theory and Related Topics (online)

August 2021 — Les Houches 2021: Dark Matter (online)

June 2021 — Pre-strings: Preparatory School for Strings 2021 (online)

June 2021 — ICTP Summer School on Particle Physics (online)

January 2021 — GGI Lectures on Fundamental Interactions (online)