KEVIN GREIF (he/him) ✉ kgreif@uci.edu

November 13, 2025

EDUCATION

University of California, Irvine 2020 - Present
Ph.D. candidate in the Department of Physics and Astronomy
Member of the ATLAS collaboration
Advisor: Daniel Whiteson

University of Notre Dame 2016 - 2020
Bachelor of Science, Magna Cum Laude
Majors: Physics and Program of Liberal Studies

RESEARCH EXPERIENCE

Machine learning based unfolding **Ongoing**
- Develop novel unfolding methods based on generative machine learning models, and contribute to community comparison studies
- Study the usage of un-binned and highly differential cross section measurements for parameter estimation
- Deploy machine learning based unfolding to perform a hyper-differential cross section measurement of Z+jets production with the ATLAS detector

Constituent based top tagging **2022 - 2024**
- Bench-marked several constituent top-tagging algorithms on realistic detector simulation
- Assessed systematic uncertainties in tagger performance
- Prepared research grade open data records for use by the broader particle physics community

Calibration of the ATLAS New Small Wheel **2022 - 2023**
- Calibrated the peak detector output (PDO) readout used in the ATLAS New Small Wheel muon detector
- Participated in operations of the detector during Run 3

Physics inspired neural networks **2018 - 2020**
- Deploy a physically motivated neural network architecture on a classifiation problem in particle physics

CMS track trigger development **2017 - 2019**
- Improved the efficiency of cuts made on track candidates in the CMS experiment's track trigger algorithm

SELECTED PUBLICATIONS

Only includes papers in which I made a significant contribution. A complete list can be found here.

1. A. Petitjean et al. "Generative unfolding of jets and their substructure". *Preprint:* 2510.19906.

2. A. Shmakov et al. "Full event particle-level unfolding with variable-length latent variational diffusion". *SciPost Phys.*, 18(4):117, 2025.

3. N. Huetsch et al. "The landscape of unfolding with machine learning". *SciPost Phys.*, 18(2):070, 2025.

4. ATLAS Collaboration. "Accuracy versus precision in boosted top tagging with the ATLAS detector". *JINST*, 19(08):P08018, 2024.

5. A. Shmakov et al. "End-to-end latent variational diffusion models for inverse problems in high energy physics". *NeurIPS proceedings*, 2023.

6. K. Greif and K. Lannon. "Physics Inspired Deep Neural Networks for Top Quark Reconstruction". *EPJ Web Conf.*, 245:6029, 2020.

PRESENTATIONS

Jul. 2025	"Forward folding versus unfolding in the age of ML" ML4Jets 2025
Nov. 2024	"Full Event Particle-Level Unfolding with Variable Length Variational Latent Diffusion" ML4Jets 2024
Nov. 2023	"Systematic Effects in Jet Tagging Performance for the ATLAS Detector" ML4Jets 2023
Nov. 2023	"End-to-End Latent Variational Diffusion Models for Unfolding LHC Events" ML4Jets 2023
Nov. 2022	"Constituent-Based Top-Quark Tagging with the ATLAS Detector" ML4Jets 2022
Nov. 2019	"Physics Inspired Deep Neural Networks for Top Quark Reconstruction" CHEP 2019

APPOINTMENTS AND MEMBERSHIPS

ATLAS Early Career Scientist Board 2024 - Present

- Advocate for the interests of early career scientists within the ATLAS collaboration
- Organize educational and career development events for early career scientists

Phi Beta Kappa Society 2020 - Present

Sigma Pi Sigma Society 2020 - Present

AWARDS

Outstanding Physics Major Physics Department, University of Notre Dame, 2020

Paul Chagnon Award in Physics Physics Department, University of Notre Dame, 2020

Recognizing service to the department and fellow students

Edward J. Cronin Award Program of Liberal Studies, University of Notre Dame, 2020

Awarded for the finest piece of written work submitted in an academic year

Hichwa Fellowship Physics Department, University of Notre Dame, 2019

OUTREACH

ATLAS Virtual Visit Tour Guide 2022 - 2025

Remote visits to the ATLAS experiment for students from around the world.

UCI Physics and Astronomy Blog 2020 - 2022

Publish short, accessible descriptions of new research from the UCI physics department.

TEACHING

- Phyiscs 3A (Mechanics) TA, Fall 2021
- Physics 3LB (Electricity and Magnetism Lab) TA, Spring 2021
- Physics 7LC (Mechanics Lab) TA, Winter 2021
- Physics 2 (Mathematical Methods in Physics) TA, Fall 2021
- Computational Methods in Physics TA, Spring 2020

REFERENCES

Daniel Whiteson: daniel@uci.edu
Ben Nachman: nachman@stanford.edu
Kevin Lannon: klannon@nd.edu