

Mariel Pettee

Physics PhD Candidate at Yale University

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Education

2015 - Present	YALE UNIVERSITY PhD in Physics (Expected 2021)	New Haven, CT
2015	UNIVERSITY OF CAMBRIDGE • Trinity College MASt in Physics, Commendable Performance	Cambridge, UK
2014	HARVARD UNIVERSITY AB in Physics and Mathematics (Cum Laude, High Honors in Field) Dramatic Arts Secondary	Cambridge, MA

Research

2020	LEARNING LATENT GRAPH REPRESENTATIONS OF THE MOVING BODY Summer internship using Graph Neural Networks to analyze choreography	Intel AI Labs
2017 - Present	GENERATIVE CHOREOGRAPHY WITH MACHINE LEARNING I lead an independent research group of 5 artists and scientists in generating and performing novel choreography based on 3D motion capture of my own movements. Sponsor: Yale Center for Collaborative Arts & Media	Yale
2016 - Present	ATLAS EXPERIMENT $VH, H \rightarrow \tau\tau$ Search Prof. Sarah Demers	CERN
2016 - 2018	ATLAS EXPERIMENT Tau Identification with Recurrent Neural Networks in the ATLAS Trigger Prof. Sarah Demers	CERN
2015 - 2016	MU2E EXPERIMENT Trigger & Data Acquisition Studies for the Muze Experiment Prof. Sarah Demers	Fermilab
2012	ATLAS EXPERIMENT Improving k-factor Estimations for NNLO $H \rightarrow b\bar{b}$ Interactions Prof. John Huth, Dr. David Lopez Mateos	CERN
2011	HARVARD-SMITHSONIAN CENTER FOR ASTROPHYSICS Reconstructing the Baryon Acoustic Oscillatory Peak Dr. Daniel Eisenstein	Cambridge, MA

Publications

2019	Pettee et. al. Beyond Imitation: Generative and Variational Choreography via Machine Learning. <i>Proceedings of the 10th International Conference on Computational Creativity</i> . arXiv:1907.05297 . The ATLAS Collaboration (Co-writer & editor). Expected Performance of the ATLAS Detector at the High-Luminosity LHC. ATL-PHYS-PUB-2019-005 . Full list of papers with the ATLAS collaboration.
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Awards

2018	US LHC Users Association Lightning Round Talk Winner Women's Faculty Forum Seed Grant
2016	Winner, Windy City Physics Slam (PBS Chicago Interview Clip) Poster Award, <i>Trigger Studies for the Muze Experiment</i> , ICHEP
2015	Honorable Mention, NSF Graduate Research Fellowship Program Leigh Page Prize, Yale University
2014	Harvard-Cambridge Scholarship Julia Shaffner Memorial Prize (Outstanding Woman in Science), Harvard University
2013	Finalist, The Harvard Innovation Lab President's Challenge 15 Most Interesting Seniors, <i>The Harvard Crimson</i>
2012	The International Student Drama Festival Judges' Award for Acting Harvard University Certificate of Distinction in Teaching The Caroline Isenberg and Elizabeth Cary Agassiz Fellowships
2011	Harvard Theater Award for Best Lead Actress in a Play

Talks

2020	BEYOND IMITATION: GENERATIVE CHOREOGRAPHY WITH AI Conference for Research on Choreographic Interfaces (CRCI)	<i>Brown University</i>
2019	EXPECTED ATLAS PERFORMANCE AT THE HL-LHC US ATLAS Workshop	<i>UMass Amherst</i>
	OVERVIEW OF TAU VS. JET IDENTIFICATION ATLAS Tau & HLeptons Workshop	<i>Prague, Czech Republic</i>
	BEYOND IMITATION: GENERATIVE CHOREOGRAPHY VIA MACHINE LEARNING International Conference on Computational Creativity (ICCC)	<i>Charlotte, NC</i>
2018	RNN TAU IDENTIFICATION WITHIN THE ATLAS HLT US LHC Users Association Meeting	<i>Fermilab</i>
	RNN TAU IDENTIFICATION IN THE ATLAS HLT ATLAS Machine Learning Workshop	<i>CERN</i>
	THE 2018 ATLAS TAU TRIGGER & COMBINED PERFORMANCE US ATLAS Workshop	<i>Pittsburgh, PA</i>
	TAU TRIGGER & CP PERFORMANCE AT HIGH μ ATLAS P&P Physics Plenary	<i>CERN</i>
	FTK & THE TAU TRIGGER ATLAS TDAQ Week	<i>CERN</i>

Posters

2020	RNN TAU IDENTIFICATION IN THE ATLAS HIGH-LEVEL TRIGGER ATLAS Trigger & Data Acquisition Week 2020	<i>CERN</i>
2019	GENERATIVE & VARIATIONAL CHOREOGRAPHY VIA MACHINE LEARNING	<i>Vancouver, Canada</i>

	Women in Machine Learning (WiML) at NeurIPS 2019	
	MACHINE WOMAN: PRESERVATION, MEMORY, FORGETTING, AND AI Women's Faculty Forum at Yale	New Haven, CT
2017	PERFORMANCE OF THE ATLAS TAU TRIGGER IN RUN 2 Advanced Computing & Analysis Techniques in Physics Research (ACAT)	Seattle, WA
2016	TRIGGER STUDIES FOR THE MU2E EXPERIMENT International Conference on High Energy Physics (ICHEP)	Chicago, IL

Teaching

	TRAINING	
2016	PHYSICS 530: Theory and Practice of Scientific Teaching for Physical Scientists	Yale University
2014	ASTRO 302: Scientists Teaching Science	Harvard University
	YALE UNIVERSITY	
2018	Physics 115: The Physics of Dance	
	American Studies 349: Technologies for Movement Research	
2017	Physics 171: University Physics for the Life Sciences	
	Physics 115: The Physics of Dance	
2016	Physics 205L: Modern Physical Measurement	
	Physics 115: The Physics of Dance	
2015	Physics 165L: General Physics Laboratory	
	HARVARD UNIVERSITY	
2013	Math 110: Vector Space Methods for Differential Equations	
2012 & 2013	Math 121: Linear Algebra and Applications	

Writing

2018	Theories of Everything , <i>Sightline Arts</i> Now or Never: The Case for a Larger Hadron Collider , <i>Yale Distilled Magazine</i>
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Service & Outreach

2020	Member of the American Physical Society's Inclusion, Diversity, and Equity Alliance (APS-IDEA)
2019 - Present	Member of the Yale Physics Climate & Diversity Committee → Advocated for a department-wide discussion of discrimination in our community → Contributed to the design of our department's Code of Conduct
2018 - 2020	US LHC Users Association advocacy trip to Capitol Hill → Met with the offices of around 15 representatives from Congress each year to ask for their support for high-energy physics research and STEM funding in general
2017 - 2018	Speaker, <i>Science in the News</i> , delivering scientific talks to the New Haven public Girls' Science Investigations at Yale
2016	Winner, Windy City Physics Slam

Choreographer: *Form Factors*, a dance intervention with physicists at ICHEP

2015 - Present Yale Women in Physics Mentor

Arts

YALE UNIVERSITY

- 2020 [Mirror Exercise](#), *AI Transparency Institute*
→ An AI-generated duet with myself, featured at the 2020 AI Governance Forum
Choreographer, *Elon Musk and the plan to Blow Up Mars the musical*
→ Yale Cabaret, dir. Liam Bellman-Sharpe
Dancer, Coordinator, & Rehearsal Director, *Yale Dance Lab*
→ New work by choreographer Vicky Shick: “everywhere”
- 2019 [SIGMA](#), *AI Art Gallery @ NeurIPS 2019*
→ Short video installation of generated choreography at a premier AI conference
Featured performer, *Learning Film (working title)*
→ Interviewed for a documentary by the Derek Jarman Lab, co-produced by Tilda Swinton
Bill T. Jones/Arnie Zane Dance Company Intensive, *Yale Dance Theater*
→ Dancer in a restaging of *D-Man in the Waters*
- 2018 Featured performer, *Machine Woman*
→ An experiential short film documenting my AI-generated choreography research
Paul Taylor Dance Company Intensive, *Yale Dance Theater*
→ Leading role as “The Hostess” in the first restaging of Taylor’s *Party Mix* in four decades
- 2017 Choreographer: “La Mort du Chorégraphe”, *A Different Drum Dance Company*
→ Ongoing Research in AI-generated choreography
Urban Bush Women Intensive, *Yale Dance Theater*
- 2016 Gaga Intensive with Saar Harari & Lee Sher, *Yale Dance Theater*
Choreographer: “Rang Cherries”, *A Different Drum Dance Company*

UNIVERSITY OF CAMBRIDGE

- 2015 Actor, *Attempts on Her Life*, dir. Tania Clarke, Corpus Playroom
Dancer, *Evolution*, ADC Theatre

HARVARD UNIVERSITY

- 2014 Director/Writer/Choreographer: [Symmetry Breaking](#)
→ My creative physics thesis: an experimental multimedia performance about the Higgs boson
President, *The Signet Society of Arts & Letters*
Choreographer-in-Residence, *Harvard Dance Center*
Dancer, *Paper Wing*, chor. Jill Johnson, Farkas Hall
- 2013 Arts@CERN Internship
Eurydice, *Antigonick*, dir. Ianthe Demos, American Repertory Theater Mainstage
Isabelle & Executive Producer, *The Edge of the Map*, dir. Calla Videt (Sightline Theater Company)
Dancer, *At Last*, Loeb Experimental Theater

Dancer, *On The Run*, Harvard Dance Center

2012

Vice-President & Mainstage Coordinator, *The Harvard-Radcliffe Dramatic Club*

→ 35+ productions as a performer, director, producer, designer, & choreographer

Lucy, *CryHurtFood*, Loeb Experimental Theater & Crucible Mainstage (Sheffield, UK)

Director: *for the purpose of catching ourselves in the act of being the most*

→ Set the Guinness World Record for the longest telephone conversation between two people

2011

Co-founder and collaborator, *The Harvard Generalist*

Drama & Dance Proctor, *Freshman Arts Program* (2011-2014)