

Mariel Pettee

Physics PhD Candidate at Yale University

mariel.pettee@yale.edu

Updated September 25, 2019

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

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	MUZE 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 150+ 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	Harvard University Certificate of Distinction in Teaching The Caroline Isenberg and Elizabeth Cary Agassiz Fellowships

Talks

2019	BEYOND IMITATION: GENERATIVE CHOREOGRAPHY VIA MACHINE LEARNING International Conference on Computational Creativity	Charlotte, NC
2018	RNN TAU IDENTIFICATION WITHIN THE ATLAS HLT US LHC Users Association Meeting	Fermilab
	RNN TAU IDENTIFICATION IN THE ATLAS HLT ATLAS Machine Learning Workshop	CERN
	THE 2018 ATLAS TAU TRIGGER & COMBINED PERFORMANCE US ATLAS Summer Workshop	Pittsburgh, PA
	TAU TRIGGER & CP PERFORMANCE AT HIGH μ ATLAS P&P Physics Plenary	CERN
	FTK & THE TAU TRIGGER ATLAS TDAQ Week	CERN

Posters

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 MUZE 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](#), *Sightline Arts*
[Now or Never: The Case for a Larger Hadron Collider](#), *Yale Distilled Magazine*

Service & Outreach

- 2018, 2019 US LHC Users Association advocacy trip to Capitol Hill
→ Met with the offices of 15 representatives from Congress to advocate for their support of high-energy physics research funding
- 2017 - 2018 Speaker, *Science in the News*, 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

- 2019 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*

HARVARD UNIVERSITY

- 2014 Director/Writer/Choreographer: *Symmetry Breaking*
→ My creative physics thesis project: an experimental multimedia performance
President, *The Signet Society of Arts & Letters*
Choreographer-in-Residence, *Harvard Dance Center*
- 2013 Arts@CERN Internship
- 2012 The International Student Drama Festival Judges' Award for Acting
Vice-President & Mainstage Coordinator, *The Harvard-Radcliffe Dramatic Club*
→ 35+ productions as a performer, director, producer, designer, & choreographer
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 Harvard Theater Award for Best Lead Actress in a Play
Co-founder and collaborator, *The Harvard Generalist*
Drama & Dance Proctor, *Freshman Arts Program* (2011-2014)