MICHELA PAGANINI

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EDUCATION

Yale University

- Ph.D. in Physics
  - Expected 2018
- M.S. in Physics, Experimental High Energy Physics
  - Dec. 2014 - Student Marshal

UC Berkeley

- B.A. in Physics
- B.A. in Astrophysics - Class of 2013

University of Cambridge

- Pembroke-King's Programme - Summer 2012

SKILLS

Analysis: Data Analysis, Statistics, Machine Learning, Data Mining, Big Data

Computing: Python, C, C++, ROOT, Matlab, LabView, IDL, LaTeX

Languages: English, Italian (bilingual), French (intermediate), Spanish (elementary), Latin

Interpersonal Skills: Management, Event Planning, Effective Communication, Active Listening, Leadership, Flexibility

AWARDS

- Leigh Paige Prize, Yale Physics Department, 2013
- UC Summer Grant, 2012
- University of California Undergraduate Grant, 2011, 2012
- UC Freshman Scholarship, 2010

RESEARCH INTERESTS

Experimental High Energy Particle Physics | Astrophysics | Reproducible Research | Deep Learning Applications to Physical Sciences | Large Scale Data Science | Science Education

WORK EXPERIENCE

Ph.D. Student, ATLAS Experiment, CERN

May 2013 - Present

- Currently optimizing track-jet based *b*-tagging techniques by investigating behavior and performance of different machine learning algorithms using both high and low level features.
- Testing RNNs for event-level classification in the $hh \rightarrow \gamma\gamma bb$ analysis.
- Using Dark Knowledge to replace the Matrix Element Method (MEM) — a Physics driven, computationally intensive routine — in order to streamline the *ttH* with $H \rightarrow bb$ analysis pipeline.
- Refined boosted top-tagging technique using Deep Learning framework. Improved efficiency over established substructure taggers.
- Developed boosted boson tagger using Deep Learning for binary and multiclass classification purposes for the $W' \rightarrow WZ$ analysis. Investigated ability to learn high order correlations between tracking and calorimeter variables, and performed variable selection studies.
- Engaged in data quality studies and corrections to dead modules of tile calorimeter for W' analysis.

Teaching Fellow, Yale Graduate School of Arts and Sciences

Aug 2013 - Present

- 4 semesters as a teaching assistant to Yale faculty members for lecture and laboratory courses on Classical Mechanics, Electromagnetism & Optics, and Quantum Mechanics.
- Led discussion and review sessions for groups of ~25 students, provided academic support, evaluated performance, held office hours.

Undergraduate Student Instructor, UC Berkeley

Jan 2013 - May 2013

- Helped designing and teaching a new interdisciplinary course with professors of Physics, Public Policy and Philosophy.
- Personally participated in the selection of lecture and homework material, assisted the faculty members in teaching and grading duties.