Fabricio Jiménez Morales

Scientist — Data and Machine Learning

Paris region, France
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Venezuelan and French (32 years old)

Experimental scientist trained in Machine Learning, motivated by data challenges. I process, visualize and model data for prediction and decision making.

Education and Professional Experience

2019 - 2022 **Physics Postdoc** LLR @ CNRS & É. Polytechnique, France.
- Detector R&D for future colliders – prototype preparation, simulation and data analysis.
- Machine Learning (ML) for Higgs physics at the International Large Detector (ILD).

2016–2019 **Ph.D., Particle Physics** *(E.U. Grant)* LPC @ Clermont-Auvergne University, France.
- *Model independent searches for New Physics using Machine Learning at the ATLAS experiment*
- **Secondments** MathWorks, University of California at Irvine (UCI), University of Padova (UNIPD)

2015–2016 **Master, Particle Physics** *(MIEM Scholarship)* Paris VII University, France.

2014–2016 **Intern–CMS collaboration** *Higgs physics analysis, hardware upgrade*, Switzerland, USA & France.

2008–2014 **Physics Undergraduate** Simón Bolívar University, Venezuela, and Lund University, Sweden.

Projects and research items

LLR **R&D for the Silicon-Tungsten electromagnetic calorimeter prototype**
Beam test of a highly granular SiW-ECAL technical prototype for the ILD (arXiv:2109.01103).

Higgs physics at the ILD A combined fit to the Higgs Branching Ratios at ILD (arXiv:2105.05718).

LPC–UCI **Gaussian Processes for model-independent resonant searches in dijet final states**
Advanced Multi-Variate Analysis Methods for New Physics Searches at the LHC (arXiv:2105.07530).

LPC–UNIPD **Penalized Anomaly Detection with Gaussian Mixture Models in New Physics searches** (Report).

MathWorks **Implementing Generalized Additive Models for MATLAB's Stats and ML Toolbox**.

ATLAS **TADA: multi-channel data monitoring** (internal webpage).

CMS **Di-Higgs searches at the LHC** (arXiv:1603.06896, credited in internal note CMS AN-14-118).

Lund **Charm and bottom production at particle colliders** *Undergraduate thesis (link).*

Skills

Computing **Programming** Python, C++, Bash, MATLAB. Git.

ML & Scientific libraries PyTorch, scikit-learn, SciPy, NumPy/pandas, Matplotlib.

Unix-like OS and services Networks, backup, clusters, user management.

Physics software ROOT, ILCSoft, MadGraph, Pythia, Delphes.

Soft skills Student supervision. Project planning and technical writing. Communication with non-specialized audiences.

Languages Fluent in English, Spanish and French. Intermediate Portuguese. Basic German.

Schools and conferences

June 2022 **ICHEP** *International Conference in High Energy Physics - Conference* Bologna, Italy.

May 2021 **TIPP'21** *Technology and Instrumentation in Particle Physics - Conference* Virtual.

April 2021 **LCWS2021** *International Workshop on Future Linear Colliders - Conference* Virtual.

Nov. 2019 **CHEF** *Calorimetry for High Energy Frontier - Conference* Fukuoka, Japan.

August 2018 **MLHEP** *Fourth Machine Learning in High Energy Physics School* Oxford University, England.

May 2018 **SOS** *School of Statistics of IN2P3 - CNRS* La Londe Les Maures, France.