MARIANO **CHAVES**

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Physics (Bachelor and Master's degree) standing out for **computational skills** (OOP, Python, C/C++, Java) and **statistics**. Has experience in statistical inference (Bayesian and Frequentist), particle physics experiment analysis, data analysis and high processing computing (HPC). Have used several Monte Carlo simulations for optimization and high dimensional sampling. In the last few years have learn the theory behind neural networks and now is studying its practical details.

ABILITIES

- Three years using **pandas** for data analysis in my Ph.D.
- **Statistical data analysis** and inference (Frequentist and Bayesian).
- **High processing** and parallel simulations.
- Expertise on **Python** libraries as: Pandas, Matplotlib, Seaborn, **Scykit-learn**, Multiprocessing, SciPy and Plotly.
- Has communication and writing skills in **English at an advanced** level.
- **Dashboards** using Plotly and a small notion on PowerBI and Tableou.
- Strong base on **signal processing** and experience working with microcontrollers.

- **Object orientated** programming (JAVA, C++)
- Experience with GSL (C++).
- Experience with **Git** and active GitHub user.
- Experience in physical systems simulations (optics, fluid mechanics and classic gravitation etc.).
- Knowledge about the **SQL** usage.
- Experience in **Monte Carlo** optimization and sampling.
- Knowledge **Machine Learning** popular methods and its variants as classification, regression algorithms and neural networks.

EDUCATION

DECEMBER, 2011
HIGH SCHOOL, COLÉGIO ESTADUAL BARÃO DO RIO BONITO
Was awarded in miscellaneous mathematics Olympics.

FEBRUARY, 2016
BACHELOR IN PHYSICS (COMPUTATIONAL), INSTITUTO DE CIÊNCIAS EXATAS - UNIVESIDADE FEDERAL FLUMINENSE
The only student to finish the course with four years (the smallest amount of time allowed). Highest class average.

FEBRUARY, 2018

MASTERS IN PHYSICS, INSTITUTO DE FÍSICA - UNIVERSIDADE FEDERAL FLUMINENSE

The presentation of his master's thesis was one of the 6 awarded among 140 works presented at the XXXIX Brazilian Meeting of Physics of Particles and Fields.

ONGOING - FEBRUARY 2022

PH.D. IN PHYSICS, INSTITUTO DE FÍSICA GLEB WATAGHIN - UNIVERSIDADE ESTADUAL DE CAMPINAS

MARCH 2021

SPLIT-SITE DOCTORAL PROGRAM (GERMANY), INSTITUT FÜR TECHNOLOGIE KARLSRUHE

EXTRA COURSES

- Introduction to SQL – DataCamp - 4h
- Data Manipulation with pandas- DataCamp – 4h
- Joining Data with pandas – DataCamp –4h
- Introduction to Data Visualization with Matplotlib – DataCamp –4h
- Supervised Learning with scikit-learn – DataCamp – 4h
- Unsupervised Learning with scikit-learn – DataCamp - 4h

EXPERIENCE

MARCH, 2015 – FEBRUARY, 2016

MONITOR (BASIC MECHANICS), INSTITUTO DE CIÊNCIAS EXATAS - UFF

Taking question from undergraduate students about subjects related to basic physics.

MARCH, 2019 – JULY, 2019

TEACHING INTERNSHIP (ADVANCED MECHANICS, A SECOND COURSE), UNIVERSIDADE ESTADUAL DE CAMPINAS

Gave lectures and handled an undergraduate class.

JULY, 2019 – DECEMBER, 2019

TEACHING INTERNSHIP (BASIC ELECTROMAGNETISM), UNIVERSIDADE ESTADUAL DE CAMPINAS

Gave lectures and handled two undergraduate classes.

SEPTEMBER, 2020 – JANUARY, 2021

TEACHING INTERNSHIP (BASIC ELECTROMAGNETISM), UNIVERSIDADE ESTADUAL DE CAMPINAS

Gave lectures and handled two undergraduate classes.

OTHER INFORMATION

- I was accepted among the first ranks in applications for doctoral exams at the Brazilian Center for Physical Research, Federal University of Rio de Janeiro, Universidade Federal Fluminense and Pontifical Catholic University of Rio de Janeiro in 2017.
- I have a trajectory of life that remarkably close to education and learning.
- I have an immense interest in getting new knowledge, I spend my spare time using my creativity to solve computational problems and I love reading about economics, history, and personal computer projects.

PUBLICATIONS

- Chaves, M. E., Gratieri, D. R., & Peres, O. L. (2020). Improvements on perturbative oscillation formulas including non-standard interactions. *J.Phys.G* 48 (2021) 1, 015001, Journal of Physics G: Nuclear and Particle Physics, Volume 48, Number 1, 2020.
- CHAVES, Mariano Esteves; SCHWETZ, Thomas. Resolving the LMA-dark NSI degeneracy with coherent neutrino-nucleus scattering. arXiv preprint arXiv:2102.11981, 2021.