EL Abassi Abderrazaq

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Short Bio

I'm Abderrazaq El Abassi, PhD student in Particle Physics at Ibn-Tofail University

Skills

- **Programming:**
  - Python, JavaScript ●●●●○
  - TypeScript ●●●○○
  - C, C++ ●●●○○
  - Java ●●○○○
  - Rust ●●○○○
  - Bash scripting ●●●○○
  - Matlab ●●○○○
  - Mathematica ●●○○○
- **data analysis:**
  - pandas, numpy, scipy ●●●●○
  - PyROOT, scikit-hep ●●●○○
- **C++ Tools:**
  - ROOT, GEANT4 ●●●○○
  - ROOFit ROOStats ●●○○○
  - TMVA ●●○○○
- **ML tools:**
  - scikit-learn ●●○○○
  - TensorFlow, Pytorch ●●○○○

Working Experience

June, 2021 – ongoing — **PhD research** — **University of Ibn-Tofail, MA**

Contributed to low energy scale MC simulations and currently started on neutrinos long baseline selection, and reconstruction using Machine Learning, and Monte Carlo production with the (**I**ntermediate **W**ater-**C**herenkov **D**etector) using simulation tools such as WCSim and a Likelihood fitter–fitQun for reconstruction

March 2020, – October 2020 — **Master thesis** — **Univeristy of Mohammed V, MA**

We interpreted the total Higgs invisible branching ratio by combining different channels of Higgs decaying to Dark Matter particles known as WIMPs (**W**eakly **I**nteracting **M**assive **P**articles) in collaboration with Higgs invisible team.

Education

Postgraduate Studies

2021 – on going — **Ph.D. in Particle Physics** — **Ibn-Tofail University, Kenitra**

Title: Sensitivity analysis of proton decay in positron plus neutral pion final state, and contribution to low-energy calibration of Hyper-Kamiokande Far detector using DTG neutron generator.
Supervisors: Prof. Mohamed Gouighri

Hyper-Kamiokande | IWCD | DTG | proton decay

2018 – 2020 — **M.Sc. in Mathematical Physics** — **Mohammed V University, Rabat**

Title: Statistical Combination of invisible Higgs decays in Vector Boson Fusion using ATLAS detetctor
Supervisors: Prof. Mohamed Gouighri
Grade: CGPA: 3.3

Dark Matter | Higgs boson | Higgs invisible | Vector Boson Fusion | ATLAS experiment | CMS experiment

Undergraduate Study

2015 – 2018 — **B.Sc. in Matter Science and Physics** — **Moulay Ismail Univ., Meknes**

Project Title: Simulation of analogical filters, and Numerical filters using Matlab.

RC circuit | RL circuit | RLC circuit | matlab | FFT

2015 – 2018 — **DEUG (University diploma) in Matter Sciences and Physics, and Chemistry** — **Moulay Ismail Univ., Meknes**

Fundamental physics, and chemistry: Classical Mechanics, and Electromagnetism, Thermodynamics, Quantum Mechanics, organic chemistry, crystallography, chemical reactions, and basic quantum chemistry...

Classical Mechanics | Electromagnetism | Quantum Mechanics | Thermodynamics | Organic Chemistry | Crystallography

Training

Jan 17/2022 – March 11/2022 (online) — **ESIPAP - COURSE 2- Advanced lectures on detectors and applications.**

The European School in Instrumentation for Particle and Astroparticle Physics (ESIPAP) aims at training Master, PhD students and professionals to the high standard of instrumentation in use in particle and astroparticle physics.

Particle Physics | Astro-particle | Detectors

Profiles

Languages

Arabic (Mother Tongue)

English

French

Japanese

Conference participation

Poster session

The first edition of African Conference on High Energy Physics (ACHEP) 23-27 Oct 2023
Presented a Poster titled Energy scale cross-calibration of Hyper-Kamiokande detector using Deuterium-Tritium neutron generator. The proceeding is accepted for publication in Spring

Publications

Preprint

Sensitivity of the Hyper-Kamiokande experiment to neutrino oscillation parameters using accelerator neutrinos 2025
DOI: 10.48550/arXiv.2505.15019

Certificates

ALX - Africa

Software engineering Jan 2023 - Ongoing
12 Month Program of programming: Data structures and algorithms with C, and web development, DevOps with Python JavaScript, and TypeScript: Specialized in Backend.

Coursera

Deep Learning Specialization Nov 10, 2024
An online non-credit course authorized by DeepLearning.AI and Stanford University and offered through Coursera, taught by Andrew ng.

Coursera

Machine Learning Specialization Mars 12,2024
An online non-credit course authorized by DeepLearning.AI and Stanford University and offered through Coursera

Edx

Machine Learning with Python-From Linear Models to Deep Learning May 19, 2023
A course of study offered by MITx, an online learning initiative of the Massachusetts Institute of Technology.

DataCamp

Data Scientist Associate Aug 30, 2023
Data science career track provided by Datacamp

Coursera

Introduction à la programmation orientée objet (en C++) Nov 16 2023
An online non-credit course authorized by École Polytechnique Fédérale de Lausanne and offered through Coursera

Projects

ALX SE - Foundation

Software engineering Nov 2023 - Dec 2024
Built a 2D Maze using C and the SDL2 library. link: https://github.com/aelabassi/Maze

ALX SE - Specialization

Software engineering Dec 2024 - Feb 2024
Contributed to the ArtCultHub project: it's an NFT and digital art and culture marketplace that aims to connect Moroccan artists and artisans with a global audience. The platform enables users to showcase and sell digital versions of traditional crafts, including NFTs of cultural art, promoting Moroccan heritage while supporting local artists. link: https://github.com/aelabassi/ArtCultHub