

# Mahmoud Haroun Mohamed Abdelrahim

Sohag, Egypt

☎ (+2) 01146295028

✉ mahmoudharoun2@gmail.com

✉ mahmoud.abdelrahim@cern.ch

🌐 Mahmoud Haroun

📺 M-Haroun

📺 Haroun school

📺 Mahmoud Haroun

## Experience

Phys. Dept., Faculty of Science, Sohag Univ.

Sohag, Egypt

Assistant Lecturer & Researcher

September 2022 – Present

- Conduct research, support data collection and analysis, and contribute to academic publications.
- Using analysis tools as Python, MATLAB and CERN ROOT for experimental data analysis, detector calibration.
- Using PYTHIA for particle physics simulations.
- Supervised nuclear and radiation physics labs, focusing on particle detection using scintillators and Geiger counters.

Phys. Dept., Faculty of Science, Sohag Univ.

Sohag, Egypt

Demonstrator & Researcher

December 2016 – September 2022

- Applied statistical methods and theoretical modeling to analyze multiplicity and correlation data.
- Assist students with understanding experimental procedures, answer questions, and offer additional help to enhance their learning experience.

## Education

### • Sohag University

Sohag, Egypt

M.S. Physics (Experimental Nuclear Physics)

January 2018 – August 2022

Thesis: "Study of Characteristics of  $^{12}C$  Interactions with Emulsion Nuclei at  $4.5A\text{GeV}/c$ "

- \* Analyzed secondary particle production in  $^{12}C$ -emulsion interactions.
- \* Investigated multiplicity distributions, correlations, and forward-backward emission asymmetries.
- \* Compared experimental results with Modified Cascade Evaporation Model.
- \* Studying particle detectors and understanding nuclear emulsion techniques.

B.S. Physics (89.6% (Excellent with Honor))

September 2012 – July 2016

Graduation project: "Analysis and plotting data and functions with FORTRAN"

4<sup>th</sup> year training project: "Numerical Single and Double Integral by FORTRAN and C++"

### • Information Technology Institute (ITI)

Sohag, Egypt

Software Engineering Fundamental Diploma

March 2021 – July 2021

- \* Acquired advanced software development skills using C and C++, Bash Shell.
- \* Focused on clean code practices, OOP, data structures and algorithm optimization.
- \* Worked with MySQL databases for structured data storage, access, and analysis.
- \* Getting a good knowledge of operating system (windows - Linux) and computer network fundamental

### • Dubai Future Foundation

Online

One Million Arab Coders Initiative (Full Stack Developer Track)

January 2018 – April 2018

## Research Interest

- High-energy particle physics.
- Standard Model and Beyond standard model physics.
- Particle detectors.
- Applying machine learning and data science to particle physics.

## Publications

Title: Study of secondary charged particles produced in  $^{12}C$ -emulsion interactions at  $4.5A\text{GeV}/c$ .

Journal: International Journal of Modern Physics E Vol. : 33, NO. : 07, Year: 2024

Author(s): M. Mohery, N. N. Abd Allah, M. Haroun, A. Mindil, and S. El-Sharkawy

DOI: 10.1142/S0218301324500265

## Language Skills

Arabic: Native | English: B2

---

## Technical Skills

**Programming & Analysis:** Python, C/C++, Bash Shell Scripting, JavaScript, FORTRAN, Matlab, OOP.

**Libraries & Tools:** NumPy, SciPy, Pandas, Matplotlib, ROOT CERN (basic), MySQL, Vmware, Git/GitHub.

**Hardware:** Radiation Detectors (Scintillation, GM), Emulsion Plate Analysis, Arduino/ESP32, Raspberry Pi.

**Simulation:** Particle collision models, detector response, energy deposition.

**Scientific Editing:** Overleaf, , Office Package.

**Operating Systems:** Linux, Windows.

---

## Projects

- **A smart robot to detect radioactive contamination and measure radiation doses**

I am a main supervisor for this project. We have honored by his excellency the President of the republic, Abdel Fattah El-Sisi. We won the first place at (ISEIC '23). The project consists of a radiation detector, a radiation alarm and a smart robot.

*links:* My TV interview on the Egyptian Channel 1, My group with the President

- **A smart talking calculator for blinds**      One of my group in TV

- **A smart eye identifier**

AI-facial recognition-based smart attendance system on a Raspberry Pi, designed to log attendance efficiently.

---

## Social Activities

- **Workshop for Graduation students**

*Analyze data and graphs using ORIGIN software.*

**Sohag Univ.**

12 Feb. 2025

- **Workshop for researchers**

*How to write a thesis and using Mendeley for managing references.*

**Sohag Univ.**

2-3 Oct. 2022 & 2-3 July 2024

---

## Conferences

- **44<sup>th</sup> International Symposium on Physics in Collision**      **Zewail City of Science and Technology, Cairo, Egypt**  
*Attendant & PhD. student*      20 - 23 October 2025
  - **ArPS Summer School on High Energy Physics**      **Zewail City of Science and Technology, Cairo, Egypt**  
*Attendant & PhD. student*      31 August - 4 September 2025
  - **ITC-EGYPT'2024 & 2025**      **ADC, Egyptian Military Academy, Cairo, Egypt**  
*Project Supervisor (2024) & Reviewer*      22-25 July 2024 & 28-31 July 2025
  - **ITC-EGYPT'2023**      **Air Defence Collage, Alex., Egypt**  
*Reviewer*      18-20 July 2023
  - **The 7<sup>th</sup> Cairo international exhibition of innovation 2023**      **New Administrative Capital, Egypt**  
*Project supervisor*      13-14 February 2023
  - **The 7<sup>th</sup> scientific conference for young researchers "2<sup>nd</sup> international"**      **Sohag Univ., Sohag, Egypt**  
*Speaker*      02-03 March 2022
  - **The 6<sup>th</sup> scientific conference for young researchers "1<sup>st</sup> international"**      **Sohag Univ., Sohag, Egypt**  
*Poster*      10 March 2021
- 

## Academic References

- Prof. Dr. Nabil Nour El-Deen      nabil.122@yahoo.com
- Dr. Mohammed Attia      mohammed.attia@cern.ch
- Dr. Mohamed Mekhmar      elkaseemy@gmail.com