

Ahmed Abdelkader Bakr

Master Student

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RESEARCH EXPERIENCE

Portsaid University

Master Research

My research interests are located in the field of theoretical space plasma physics including modeling of Magnetohydrodynamical plasma waves observed in the planetary ionospheres and magnetospheres specially the Magnetosonic waves on Mars' Ionosphere.

Assiut University

Undergraduate Research

My graduation research Essay was in the field of computational physics that discussed the numerical solution to Time independent Schrodinger equation in 1D using Numerov method on FORTRAN.

TEACHING EXPERIENCE

Teaching Assistant

Physics Department, Faculty of Engineering, Egypt University of Informatics

New Administrative Capital, Cairo, Egypt
(Sep 2023 – Present)

- Teaching Undergraduate Tutorials and labs:

- Mechanics
- Electricity and Magnetism

This work included grading students' reports and assignments and preparing lab exams and quizzes.

Physics Department, Faculty of Science, Galala University (Powered by Arizona State University)

Galala City, Suez, Egypt
(Sep 2021 – Aug 2023)

- Teaching Undergraduate labs such as:

- Mechanics Lab
- Electricity and Magnetism Lab
- Modern Physics Lab
- Oscillation and Waves
- Optics Lab
- Solid State Physics Lab
- Biophysics Lab

This work included grading student reports and preparing exams. **I was chosen to teach labs in the dual degree program with Arizona State University.**

EDUCATION

M.Sc. in Theoretical Physics

(Mar 2024)

Portsaid University, Portsaid, Egypt

Area of Specialization: Theoretical Physics

Thesis Title: “Modeling of Plasma Waves on Mars”

Supervisor: Prof. Waleed Moslem

Cumulative GPA: 3.87/4

Rank: First

B.Sc. in Physics

(Aug 2019)

Assiut University, Assiut, Egypt

Honor Thesis: “Solving Schrodinger Equation Numerically”

Academic Supervisor: Dr. Sherif Rashad

Grade: Good (GPA: 2.39/4)

PUBLICATIONS

Submitted to Chinese Journal of Physics.

[A.A. Bakr](#), W Moslem, I Elkamash. “Modified Alfven Waves in the Martian Upper Ionosphere”.

CONFERENCE PRESENTATIONS

“Magnetosonic waves of Multispecies model propagating in the Martian ionosphere with multiple modes”, Plasma physics conference, 8th SPSP, Portsaid University, Portsaid, Egypt, Mar. 2023.

SCHOOLS & WORKSHOPS

Arab Physical Society Summer School on Physics at Mansoura University **(Aug 2023)**

A week-long summer school on advanced physics that provides a series of lectures on Quantum Mechanics, Quantum Field Theory, General Theory of Relativity, Electrodynamics and Particle Physics. In addition to a series of seminars on cutting-edge research topics such as Application of GTR to Black Holes, Resummation Theory with applications in QFT, Gravitational Waves and Quantum Computing.

8th Spring Plasma School at Portsaid (8th SPSP) **(Mar 2023)**

Annual event that targets BSc and MSc students who are interested in or studying plasma physics and plasma applications. It is a week of lectures provides the research points in Plasma Theory, hands-on computational tutorials, and problem-solving in plasma physics.

1st High Energy Physics Simulation Course **(Aug 2022)**

A week-long project oriented course preceded by a crash course in detector physics and the basics of particle interaction with matter. It started with tutorials and hands-on exercises using CERN ROOT libraries. It provided an opportunity to write (from scratch) a simulation of a particle detector building a deep insight into Monte-Carlo simulation Reconstruction.

CTP Summer Internship by the Center of Theoretical Physics at the BUE (Jul 2022)

Short courses on fundamental topics that are not widely taught in Egypt such as Cosmology, Black Hole Physics, General Relativity, and Quantum Field Theory.

7th Spring Plasma School at Portsaid (7th SPSP) (Mar, 2022)

Nano-Degree on Data Analysis, Data Science, and Machine Learning (Aug 2021)

An online Nano-degree provided by Udacity and sponsored by the Egyptian Government that last for more than three months on different stages that I have passed them all (Beginner, Intermediate, and Advanced). This degree included learning different methods and techniques and applying them in real world projects using (Python, Jupyter, Java, Html, ...etc.)

6th Spring Plasma School at Portsaid (6th SPSP) (Mar 2021)

5th Spring Plasma School at Portsaid (5th SPSP) (Mar 2020)

Workshop on Astrophysics by Ain Shams University (Sep 2019)

One day workshop introduces the fundamental structure and current research interest in the field of astrophysics.

Advanced summer workshop of physics by Zewail City (Aug 2019)

One day workshop held at Zewail City that targets BSc and MSc students and consist of three advanced lectures, Special Relativity, General relativity, and Astrophysics and Cosmology.

4th Spring Plasma School at Portsaid (4th SPSP) (Mar 2019)

AWARDS _____

Best Presentation Award. 5th plasma physics Conference during 8th SPSP (Mar 2023)

SKILLS _____

Numerical Computation: Mathematica – MATLAB – Mathcad2000.

Programing: Python – C++ – FORTRAN.

Data Analysis: Python – Jupyter – Java – HTML.

Text processing software: LaTeX – Scientific workPlace – Microsoft Office.

Languages: Arab (native) – English (Advanced) – French (Beginner).

- **Duolingo** English Test (**DET**) – **120**.
- International English Language Testing System (**IELTS**) – **6**

UNIVERSITY SERVICE _____

Center of Theoretical Physics, British University in Egypt (BUE)

- Participating in Plasma Physics Course as a teaching assistant
 - Assisting students during the annual plasma physics course held at CTP at BUE by monitoring them in solving problems and conducting tutorials.

Galala University

- Monitoring a scientific undergraduate student club.
- Assist in planning and preparing scientific events like summer schools and symposiums.

Portsaid University

- Assisting in planning, preparing and organizing Spring Plasma School (SPSP) for 4 years.
- Mentoring participants in solving problems during tutorial sessions within the summer courses and spring schools.

Assiut University

- Cofounder of a society of physics students (SPS-Assiut)
 - Organizing the annual High Energy Physics Simulation Summer course.
- Member of the scientific committee of the student union for two years.

SOCIAL SERVICE

Life Makers Egypt

(Jul 2015, Feb 2020)

- Member of the High Board – Assiut.
- University Projects Manager.
- Health Projects Manager.
- Team leader at Rizk Halal project.
- Team leader at Al-Sahm project.
- Team leader at the University project

MEMBERSHIP

Arab Physical Society (ArPS)

(Jun 2023)

Egyptian Syndicate of scientific professions

(Sep 2019)

REFERENCES

Prof. Waleed Moslem

Physics Department, Faculty of Science, Portsaid University

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Dr. Ibrahim Elkamash

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Mr. Faisal Sayed

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