Ahmed M.H. Ahmed

Astronomy, Space Sciences and Meteorology Department,
***Faculty of Science, Cairo , University,* Cairo University Rd.,**
Giza, Giza Governorate- 12613

Contacts:

***Tel# (cell):* +2(0115) 149 5570**

Email: ahamza@sci.cu.edu.eg & ahamza@cu.edu.eg

Language Proficiency:

Arabic (Native)

English (Very good skills)

Academic qualifications:

1. PhD. in Astronomy, November 2015, Faculty of Science, University of Western Ontario.
   - Thesis Title: "**Nitrogen Abundances in Early-Type Be Stars**", Supervisor: Dr. T.A.A. Sigut.
2. M.Sc. in Astronomy, August 2011, Faculty of Science, University of Western Ontario.
   - Project Title: "**The Temperature Structure of Be Star Disks in the Small Magellanic Cloud**", Supervisor: Dr. T.A.A. Sigut.
3. B.Sc. in Physics and Astronomy, May 2004, Faculty of Science, Cairo University.

Professional Experience:

1. Lecturer of Astronomy & Astrophysics, Astronomy department, Faculty of Science, Cairo University (November 2016 – Present).
2. Teaching & Research Assistant, Astronomy department, Faculty of Science, Cairo University (July 2016 – October 2016).
3. Research Assistant in Astronomy & Physics department, Faculty of Science, University of Western Ontario (from November 2015 – June 2016).

4. Teaching & Research Assistant in Astronomy & Physics department, Faculty of Science, University of Western Ontario (from September 2009 – August 2015).

5. Teaching & Research Assistant, Astronomy department, Faculty of Science, Cairo University (from Dec.2005 - August 2009).

Research Interests:

- Stellar astrophysics
- Quantitative spectroscopy
- Chemical abundances of early-type stars
- Observational constraints on stellar evolution
- The Be phenomenon
- Star clusters
- Galactic Structure, dynamics & Evolution

Referred Publications:

1. "***Structure and Evolution of Multi-Cluster within Galactic Disc: Gaia DR3 Insights into Eight Open Clusters***" **A. Ahmed**, W. H. Elsanhoury, D. C. Cınar, A. A. Haroon, M. S. Alenazi and E. A. Elkholy, 2026, Journal of Astrophysics and Astronomy, Vol. 47, Article 31.

2. "***Tracing the Galactic Disk with Gaia DR3: A Deep Study of Berkeley 17, 18, and 39 Open Star Clusters***" **A. Ahmed**, W. H. Elsanhoury, D. C. Çınar, S. Taşdemir, R. Canbay, A. A. Haroon, and M. S. Alenazi, 2026, Astronomische Nachrichten, Vol. 347, Issue 4, e70097.

3. "***Exploring the Structure and Evolution of Four Young Open Clusters Near the Galactic Mid-plane via Gaia DR3***", Elsanhoury, W. H., Tasdemir, S., Cınar, D. C., Canbay, R., Haroon, A. A., and **Ahmed, A.**, 2026, Research in Astronomy and Astrophysics, 26:035020 (22pp).

4. "***Deep Photometric and Astrometric Investigation of the Non-relaxed Star Cluster Stock 3 using Gaia DR3***" **A. Ahmed**, A. R. Youssef, M.S. El-Nawawy, W. H. Elsanhoury, 2025, Astrophysical Bulletin, Vol. 80, No. 2, pp. 209–222.

5. "***An in-depth analysis of the differentially expanding star cluster Stock 18 (Villafranca O-036) using Gaia DR3 and ground-based data***", J. Maíz Apellániz, A. R. Youssef, M.S. El-Nawawy, W. H. Elsanhoury, A. Sota, M. Pantaleoni González, and **A. Ahmed**, 2024, Astronomy & Astrophysics, 690, A48.

6. "***Photometric and Astrometric investigation of the two open star clusters Stock 3 and Stock 18 using the PPMXL Catalogue***" Amira R. Youssef, M.S. El-Nawawy, R. Bendary, and **A. Ahmed**, 2024, Accepted for publication in Global Journal of Scientific Research.

7. "***The impact of the AGN and the torus properties on the evolution of spiral Galaxies***", M. A. Abdulrahman, K. A. Gadallah, **A. Ahmed** and M. S. El-Nawawy, 2023, MNRAS, 519, 861.
8. "***Rotational Mixing in Be Stars: Nitrogen Abundances for a Sample of Be Stars from the MiMeS Survey***", **A. Ahmed**, & T.A.A. Sigut, 2017, MNRAS, 471,3398.
9. "***Non-LTE Equivalent Widths for N II with Error Estimates***", **A. Ahmed**, & T.A.A. Sigut, 2016, MNRAS, 455, 1099A.
10. "***The Temperature Structure of Be Star Disks in The Small Magellanic Cloud***", **A. Ahmed**, & T. A. A. Sigut, 2012 ApJ 744, 191 (10pp).
11. "***The Motion of a Test Particle in The Gravitational Field of a Collapsing Shell***" A. Eid and **A. M. Hamza**, 2009, EJTP, Vol. 6, Issue 21, p175.

Scientific Conferences:

1. Bright Emissaries 2014, University of Western Ontario, London, Ontario, Canada, August 11-13th, 2014.
2. CASCA 2012, University of Calgary, Calgary, Alberta, Canada, June 4th -7th, 2012.
3. CASCA 2011, University of Western Ontario, London, Ontario, Canada, May 30th - June 2nd, 2011.
4. The 1st Middle East-Africa Regional IAU Meeting, Cairo, Egypt, April 5th -10th, 2008.
5. The 2nd workshop on Ionospheric physics and application, in cooperation between the Astronomy Department, Cairo University and ICTP at Cairo University and Bibliotheca Alexandria, January 14th -17th 2007.
6. The 1st workshop on Ionospheric physics and application, in cooperation between the Astronomy Department, Cairo University and ICTP at Cairo University, March 29th – April 1st, 2004.

Conferences Participation:

Posters:

1. "**Nitrogen Abundances in Rapidly Rotating B Stars**" , **A. Ahmed** and T.A.A. Sigut, Bright Emissaries 2014, University of Western Ontario, London, Ontario, Canada, August 11-13th, 2014.
2. "**Be Stars Disks at Low Metallicity**", **A. Ahmed** and T.A.A. Sigut, CASCA 2011, London, ON, Canada, May 30th – June 2nd, 2011.

Talks:

1. "The Temperature Structure of Be Star Disks in the Small Magellanic Cloud", CASCA 2012, Calgary, AB, Canada, June 4th -7th, 2012.

Academic honors received:

1. Sultana Nahar Award for best researcher in Astronomy department, Faculty of Science, Cairo University, 2018.
2. Awards of the International Publication of Cairo University, 2017 and 2018
3. A governmental fellowship for graduate studies at Astronomy Department, Cairo University, since December 2005 – August 2009.
4. Abd Alqawy Aiad's award for excellent academic achievements in Astronomy, May 2004.
5. Three Awards of excellence from the ministry of higher education during undergraduate studies October 2000-May2004.

Public Outreach:

- Public talk: "Star Formation", Cronyn Observatory, University of Western Ontario, July 29th, 2011.
- Telescope operator: Cronyn Observatory, University of Western Ontario, June 29th 2010.

Membership of Scientific and Professional Organization:

Junior member of the International Astronomical Union (2017-present)

Personal Key Competencies and Skills:

1. Communication skills
2. Microsoft Office Application (Word, Excel, Power Point)
3. Presentation skills
4. Programing & Data analysis
    a. Fortran, MATLAB, Python
    b. IRAF, Image Reduction and Analysis Facility, software.
    c. Spectral synthesis codes (e.g. TLUSTY, MULTI).
5. Research skills

Teaching activities:

Undergraduate Courses:

1. **Introduction to Space Physics** (S211), a 3rd level course for space sciences students (Science Faculty, Cairo University).

    - This course aims to acquaint the student with knowledge about Sun and its atmosphere, heliosphere and heliospheric medium, Earth's ionosphere and magnetosphere and solar-terrestrial physics.

2. **Observation Lab. II** (A406), a 8th level laboratory for astronomy students (Science Faculty, Cairo University). [Lab. Supervision & coordination]

    - This Lab. aims to provide the student with basics of the spectral synthesis analysis process and to able to use the IRAF, Image Reduction and Analysis Facility, software.

3. **Planetary Physics** (A322), a 6th level course for astronomy students (Science Faculty, Cairo University).

    - The primary aim of this course is to be familiar with the different members of the solar system and to understand the physical, chemical and geological characteristics of each class of objects in the solar system

4. **PC Astronomical Software Lab. I** (A306), a 6th level laboratory for astronomy students (Science Faculty, Cairo University). [Lab. Supervision & coordination]

    - This Lab. aims to provide the student with knowledge about many astronomical concepts and phenomena through a number of PC interactive programs.

5. **Radiative Transfer** (A313), a 5th level course for astronomy students (Science Faculty, Cairo University).

    - This course aims to provide the student with knowledge about radiation and its importance for classification and identification of the stellar objects.

6. **Stellar Atmospheres** (A412), a 8th level course for astronomy students (Science Faculty, Cairo University).

    - The primary aim of this course is to understand what is meant by the atmosphere or photosphere, and appreciate, in terms of the relevant equations the similarities and differences between this region and the stellar interior.

7. **Stellar Structure and Evolution** (A312), a 6th level course for astronomy students (Science Faculty, Cairo University).

- The primary aim of this course is to understand what the interior structures of stellar atmospheres and the underlying physics, and how stellar interiors evolve from birth to death.

Graduate Courses:

1. **Advanced Planetary Physics** (AAP672), Pre-Master in Astrophysics (Science Faculty, Cairo University).

    - The primary aim of this course is to provide the students with the basic idea of planetary atmospheres, ionospheres and magnetospheres, focusing on terrestrial planets.

    - It also enables the students to derive and use the basic equations in this field, the structure and composition of atmospheres, the origin and the physics of planetary ionospheres and magnetospheres.

    - It also helps the students to understand the different observed phenomena in these regions.

2. **Astrophysics of Solar System** (ASP522), Diploma of Space Physics program (Science Faculty, Cairo University).

    - The primary aim of this course is to understand the physics of the different members of our solar system, solar physics, and solar-terrestrial interactions.

3. **Galactic Structure** (AQ13), Astronomy Qualification program (Science Faculty, Cairo University).

    - The primary aim of this course is to be familiar with the concept of a galaxy, the characteristics of our own, Milky-Way, galaxy, the different types of galaxies, active galaxies and the current picture of the universe.

4. **Planetary Physics** (AQ14), Astronomy Qualification program (Science Faculty, Cairo University).

    - The primary aim of this course is to be familiar with the different members of the solar system and to understand the physical, chemical and geological characteristics of each class of objects in the solar system.

5. **Solar Physics** (ASP524), Diploma of Space Physics program (Science Faculty, Cairo University).

    - The primary aim of this course is to understand basics of solar physics; its interior structure and its atmosphere, the energy generation and transfer mechanism within Sun, the explosive sun; solar flares, prediction of explosions on the Sun, solar wind and Sun-Earth connection.

6. **Stellar Structure and Evolution** (AQ9), Astronomy Qualification program (Science Faculty, Cairo University).

    - The primary aim of this course is to understand what the interior structures of stellar atmospheres and the underlying physics, and how stellar interiors evolve from birth to death.

Labs and Tutorial (Teaching assistant):

1. **First year Physics Lab. I,** a 1st level laboratory for physics, engineering, and biological sciences students (Science Faculty, Western University). A physics laboratory for Physics 1301B, Physics 1401B, Physics 1501B, Physics 1028A, Physics 1029B courses

2. **First year Physics Lab. II**, a 2nd level laboratory for physics, engineering, and biological sciences students (Science Faculty, Western University). A physics laboratory for Physics 1302B, Physics 1402B, Physics 1502B, Physics 1028A, Physics 1029B courses.

3. **Physics for Engineering Students I** (Physics 1401A) Tutorial, a 1st level course for engineering students (Science Faculty, Western University).

4. **Physics for Engineering Students II** (Physics 1402B) Tutorial, a 2nd level course for engineering students (Science Faculty, Western University).

5. **The Search for Life in the Universe I** (Ast2021A)**,** a 3rd level course for non-science students (Science Faculty, Western University).

6. **The Search for Life in the Universe II** (Ast2021B)**,** a 4th level course for students (Science Faculty, Western University).

7. **Astrophysics Lab. I** (A409), a 7th level laboratory for astronomy students (Science Faculty, Cairo University).

8. **Solar Observation Lab.** (A201), a 3rd level laboratory for astronomy students (Science Faculty, Cairo University).

9. **Stellar Observation Lab.** (A202), a 4th level laboratory for astronomy students (Science Faculty, Cairo University).

Training courses Attended:

1. AI Applications in Education & Scientific Research
2. Arabic and English Editing in Scientific Research
3. Change Management
4. Communication Skills in Different Educational Modes

5. Competing for Research Funds
6. Conference Organization
7. Critical Thinking
8. Effective Teaching Skills
9. Electronic Learning
10. Fundamental of Digital Transformation Certificate (1 Module: Mobile App)
11. Exams and Student Evaluation Systems
12. Fundamentals of blended learning
13. International Publishing of Scientific Research
14. Legal and Financial Aspects in University Environment
15. Managing Time and Meetings
16. Strategic Planning
17. The Credit Hour Systems
18. University Code of Ethics
19. University Management

- Courses mentioned above were attended in the Faculty and Leadership Development Center, Cairo University.