Curriculum Vitae • Alaa I. Ibrahim, Ph.D.

Clockwise from top left: with my students during (a) observation of a solar eclipse at the Pyramids,(b) testing a quadcopter project that provided the first aerial survey of the university campus (AUC) and its neighborhood, (c) lecture demo activity on thermal physics with an infrared imager, (d) underwater cleanup and hands-on learning in a Red Sea coral reef area, and (e) a student visit exchange at Harvard developed by Dr. Jonathan Grindlay (Harvard) and I.

Biography

Dr. Alaa Ibrahim received his Ph.D., M.Ph., and M.Sc. degrees from George Washington University and University of Maryland at College Park, while conducting research at NASA Goddard Space Flight Center (GSFC) for seven years. He was then a postdoc at NASA GSFC then at MIT as a Fulbright Scholar (1 year each). His research visits included Harvard University, University of Michigan, University of Leicester, and University College London. **As a scientist**, he utilizes satellite and ground-based observations to study the physics of neutron stars and black holes (primary area), as well as Earth's atmosphere (secondary area). Highlights of his research include the discovery of the new neutron star XTE J1810-197 (the first transit magnetar; see press releases and coverages by NASA 1, 2, 3, 4; GWU 1, 2, 3; Scientific American 1, 2; Science 1, 2 and Astronomy 1 magazines; and Akhbar-Alyoum 1) and the first decadal survey of atmospheric particulate matter over North-East Africa (1). **As an educator**, he utilizes active pedagogies such as experiential, project-based and community-based learning to enrich science education in physics and astronomy and build capacities in undergraduate research (see examples of student projects). With Dr. Jonathan Grindlay of Harvard University, established a visiting program at the Harvard College Observatory to promote undergraduate research. **As an advocate of outreach and public engagement in science**, he develops programs of informal science education and lifelong learning, including public stargazing (1,2), Science Festivals and exhibits visits, Radio and TV popular science programs (1, 2). His initiatives were featured in invited editorials in *Science* and *Nature* magazines. Dr. Ibrahim's work attracted funding from NASA, NSF, Fulbright Commission, COSPAR, IAU, U.S. National Academy of Science, USAID, and ICTP. His collaborators include Harvard, MIT, Boston University, University of Michigan, University of California San Diego, and University of North Carolina. Dr. Ibrahim was **awarded** the best PhD thesis in physics award by George Washington University, the Fulbright Scholar Fellowship, United Nations Summer Academy Fellowship by the United Nations System Staff College, the Provost and Dean (twice) awards from the American University in Cairo, Cairo University achievement award, and the Egyptian National Radio medal. Dr. Ibrahim is **fellow** of the Egyptian National Academy of Science (ASRT) and member of the board of two of its national councils. His **professional society** memberships include the International Astronomical Union (IAU), American Geophysical Union (AGU), Committee on Space Research (COSPAR), EuroScience, and the American Association for the Advancement of Science (AAAS). His **advisory** and **professional service** roles include the Gulf Physics Olympiad, the International Physics Olympiad (as trainer and team leader of the Egyptian National team during 2017 and 2018 that received 2 silver and 1 bronze medal), the Euro-Science Open Forum (member of the organizing committee during 2012-2018), the Egyptian and the U.S. National Academy of Sciences, the Community-Based Learning Board at the American University in Cairo, the Fulbright

Program, and the Egyptian-German exchange program (DAAD). He serves as the faculty adviser to the Students' Physics Group and Astronomy Club at SQU, and previously of the Astronomy Club at AUC and ZC and the faculty adviser of the AUC local chapter of the Society of Physics Students. During his academic career, Dr. Ibrahim served on various university, national, and international committees, task forces, and advisory groups, including university curriculum committees, scholarship committees, chairing a university-wide committee on outreach and directing its program on science outreach, planning the scientific program of the Euro-Science Open Forum, and being a referee to professional journals in his areas of expertise. **As an avid lifelong learner**, he enjoys scuba diving, amateur/ham radio, photography, and model aircraft aviation.

Education

- **PhD** in Physics (Astrophysics) in **2003** from George Washington University (while based at NASA GSFC)
    - Advisors: William Parke (GWU) and Jean Swank (NASA GSFC) • Thesis: *Spectral Signatures of Magnetars*
- **M.Ph.** in Physics (Astrophysics) in **2002** from George Washington University (while based at NASA GSFC)
    - Advisors: William Parke (GWU) and Jean Swank (NASA GSFC)
- **M.Sc.** in Physics (Quantum Electrodynamics) in **1997** from the University of Maryland at College Park
    - Advisor: Joseph Sucher • Thesis: *Møller Scattering in the 4th Order Perturbation Theory*
- **M.Sc. Coursework** in Theoretical Physics in **1993** from Cairo University, Faculty of Science, Physics Dept.
- **B.Sc.** in Physics in **1991** from Cairo University, Faculty of Science, Physics Dept. (graduated top of class)

Positions

- 2012 - present Associate Professor, American University in Cairo (on leave from Cairo University)
- 2011 - present Director of the Science Outreach Program, American University in Cairo (administrative position with teaching relief)
- 2010 - 2011 Assistant Professor, American University in Cairo
- 2008 - 2009 Fulbright Scholar, Massachusetts Institute of Technology
- 2007 - 2008 Assistant Professor, American University in Cairo
- 2004 - 2007 Assistant Professor, Cairo University
- 2003 - 2004 Postdoctoral Fellow, NASA Goddard Space Flight Center
- 1997 - 2003 Research Assistant, NASA Goddard Space Flight Center
- 1994 - 1997 Teaching Assistant, University of Maryland at College Park
- 1991 - 1994 Teaching Assistant, Cairo University, Faculty of Science

Visiting Positions

- Summer 2007 Visiting Scientist, University of Leicester, U.K.
- Summer 2006 Visiting Scientist, Harvard University
- Summer 2005 Visiting Scientist, University College London, U.K.

Awards and Honors

- 2015 Fellow of the Egyptian National Academy of Science and Technology (ASRT) and member of two of its national council
- 2013 National Radio President's Medal (Photo)
- 2012 Provost's Award, American University in Cairo (Photo)
- 2011 Dean's Award, American University in Cairo (Photo)
- 2010 Dean's Award, American University in Cairo (Photo)
- 2008 Fulbright Scholar Fellowship
- 2006 Cairo University Achievement Award
- 2003 Best PhD Thesis Award, Physics Department, George Washington University
- 1997-2003 University Fellow, George Washington University
- 1991 Dr. Mahmoud Mokhtar Award for the top physics graduate, Faculty of Science, Cairo University

Advisory Roles and Service

- Member of the Career Committee of the Euro-Science Open Forum (ESOF 2016), Manchester, U.K., 2015 - 2016
- Member of the Program Committee of the Euro-Science Open Forum (ESOF 2014), Copenhagen, 2012 - 2014

- Member of the board of the National Network of Nuclear Sciences, Egyptian Academy of Scientific Research and Technology, 2014 - present
- Reviewer, the Astrophysical Journal, Impact factor 6.0, Published by IOP (most recently reviewed article: Dec. 2015)
- Reviewer, German Academic Exchange Service (DAAD) (most recently reviewed grant cycle: Dec. 2015)
- National Focal Point (Egypt) for the Inter-Academy Panel (IAP) Science Education Programme
- Member of the Community Based Learning Board at the American University in Cairo, 2012 - present
- Adviser to the U.S. National Academy of Science on its International Faculty Development Project on Education about the Responsible Conduct in Sciences with Dual Use Potential, 2010 - 2012. Project Report

Professional Membership

- International Astronomical Union (IAU)
- Committee on Space Research (COSPAR)
- IEEE (Full Member)
- EuroScience
- American Association for the Advancement of Science (AAAS)
- American Geophysical Union (AGU)
- American Astronomical Society (AAS)

Teaching and Curriculum Development

- **Areas of Expertise:** Physics, Astronomy & Astrophysics, Earth and Environmental Science
- **Courses Taught:**

  Physics
  - PHYS 1011 - Mechanics, Sound, and Heat, including a laboratory (Taught at AUC)
  - PHYS 1021 - Electricity and Magnetism, including a laboratory (Taught at AUC)
  - PEU 211 - Thermodynamics, Wave Motion, and Optics Laboratory (Taught at Zewail University)
  - PHYS 2041 - Foundations of Modern Physics (Taught at AUC)
  - PHYS 224 - Waves and Vibrations (Taught at Cairo Univ.)
  - PHYS 431 - Quantum Mechanics (Taught at Cairo Univ.)

  Astronomy & Astrophysics
  - PHYS 4930* - Astrophysics and Space Science (Taught at AUC)
  - ASTR 111 & 112 - Introduction to Astronomy + Laboratory (Taught at George Washington Univ.)

  Earth and Environmental Science
  - PHYS 1930* - Future of Life on Planet Earth and Beyond (Taught at AUC; a core curriculum course taught to students from all majors). 50% Astronomy and 50% Earth and Environmental Science
  - A modified version of PHYS 1930*: Earth's Changing Environment: Science, Technology, and Policy

  Core Curriculum Courses
  - SCI 1020 - Scientific Thinking (Taught at AUC; a core-curriculum course taught to students from all majors). 34% Scientific Method, 33% Origin of Universe, 33% Origin of Life & Evolution
  - PHYS 1930* - Future of Life on Planet Earth and Beyond (Taught at AUC; a core curriculum course taught to students from all majors). 50% Astronomy and 50% Earth and Environmental Science

  * Indicates new courses developed

- **Curriculum Development**

  Developed and taught the following courses and laboratories, including utilizing active learning pedagogies:
  - The core curriculum course PHYS 1930: Future of Life on Planet Earth and Beyond (AUC) and its modified version: Earth's Changing Environment: Science, Technology, and Policy
  - PHYS 4930: Astrophysics and Space Astrophysics (AUC)
  - PEU 331* - Stellar Structure and Evolution (Taught at Zewail University)
  - PEU 438* - Compact Objects and High Energy Astrophysics (Taught at Zewail University)
  - An undergraduate minor in Astronomy and Space Technology (AUC)

- **Teaching Evaluation**
  - Student Evaluations: Cumulative 7-year score of 4.1 out of 5.0.

- **Project-Based and Experiential Learning Initiatives**

- **Harvard Summer Internship**
  Introduced a summer internship program for Egyptian students at Harvard Center for Astrophysics with Dr. Jonathan Grindlay of Harvard. The program has been running successfully since 2008. Photos | video interview | illustration of a project
- **Environmental Survey in Greater Cairo**
  Mapping the Quality of Air, Drinking Water and UV level in the Greater Cairo area: Map
- **Student Mentorship**
  Provide students with observational resources (telescopes and access to data) and mentored their course-related and graduation projects. Example Projects

- **STEM Active Learning**
  - Introduced STEM active learning activities through hands-on programs that involve Stargazing, Model Aircraft & Aviation, Amateur/Ham Radio, and Scuba Diving

- **Community-Based Learning Course Projects**
  Introduced community based learning components in my courses through student projects on environmental science and science education.
  Sample Student Projects:
  - Mapping the Quality of Air, Drinking Water and UV level in the Greater Cairo area: Map 1 | Map 2
  - Science Education Multimedia: Blue Skies Again (Impact of Air Pollution) | The Universe Through Culture and Time | The Elements of Life | The Uses of Satellites | Water & Sustainability | Life Cycle of Stars | How do we Think? (Neuro-Transmission) | The Life of Stars | Happy Planet Index | The Ozone Layer | The Evolution of Life on Earth & Global Warming | Egypt Then and Now | The Future of Life
  - Building hands-on and illustrative exhibits and demos, e.g. solar and lunar eclipse models, human sundial. Examples in this exhibit.

In the News

- NASA Press Releases and Coverages 1, 2, 3, 4
- George Washington University Press Releases 1, 2, 3
- American University in Cairo Press Releases 1, 2, 3, 4, 5, 6
- Science Magazine 1, 2
- Scientific American English | Arabic
- Astronomy Magazine PDF | Online
- Nature Magazine 1, 2, 3 , 4, 5
- Akhbar-Alyoum Newspaper Coverage PDF
- Al-Ahram Newspaper 1 , 2 , 3, 4, 5, 6
- Al-Youm Al-Sabea 1, 2, 3, 4
- Al-Masry Al-Youm / Daily News Egypt 1, 2, 3, 4
- Other Newspaper 1, 2
- International and Regional Newspapers: Washington Times, Al-Raya
- TV interviews Vimeo | YouTube

Teaching and Curriculum Development

- **Areas of Expertise and Interest:** Physics, Astronomy, Earth and Environmental Science

- **Courses Taught:**
  Physics
  - Phys 111 - Classical Mechanics, Sound, and Heat (Taught at AUC)
  - Phys 112 - Electricity and Magnetism (Taught at AUC)
  - Phys 211 - Introduction to Relativity and Modern Physics (Taught at AUC)
  - Waves and Vibrations (Taught at Cairo Univ., Faculty of Science to 2nd year students)
  - Quantum Mechanics (Taught at Cairo Univ., Faculty of Science to 4th year students)

  Astronomy
  - Phys 415* - Astrophysics and Space Science (Taught at AUC)

- Phys 199* - Future of Life on Planet Earth and Beyond (Taught at AUC; a core curriculum course taught to students from all majors). ½ Astronomy and ½ Earth and Environmental Science
- Astronomy Laboratory (Taught at George Washington Univ. to sophomore students)

Earth and Environmental Science

- Phys 199* - Future of Life on Planet Earth and Beyond (Taught at AUC; a core curriculum course taught to students from all majors). ½ Astronomy and ½ Earth and Environmental Science
- A modified version of Phys 199*: Earth's Changing Environment: Science, Technology, and Policy

* Indicates new courses I introduced

Core Curriculum Science

- Sci 120 - Scientific Thinking (Taught at AUC; a core-curriculum course taught to students from all majors)

- **Curriculum Development**
  - Developed and taught the core curriculum course Phys 199: Future of Life on Planet Earth and Beyond (AUC) and its modified version: Earth's Changing Environment: Science, Technology, and Policy
  - Developed and taught Phys 415: Astrophysics and Space Science (AUC)
  - Developed a new curriculum for a course on Waves and Vibrations (Cairo Univ.)
  - Developed a course proposal on Aviation and Aeronautics (AUC)
  - Developed the curriculum of an undergraduate minor in Astronomy and Space Technology (AUC)

- **Teaching Evaluation**
  - Student Evaluations at AUC: Cumulative 7-year score of 4.1 out of 5.0 (Spring 2015 semester evaluations score of 3 courses is 4.41 out of 5.0).

- **Project-Based and Experiential Learning Initiatives**
  - **Harvard Summer Internship**
    Introduced a summer internship program for Egyptian students at Harvard Center for Astrophysics (with Dr. Jonathan Grindlay of Harvard). The program has been running successfully since 2008. Photos | video interview | illustration of a project
  - **Environmental Survey in Greater Cairo**
    Mapping the Quality of Air, Drinking Water and UV level in the Greater Cairo area: Map
  - **Student Mentorship**
    Provided students with observational resources (telescopes and access to data) and mentored their course-related and graduation projects. Example Projects

- **Community-Based Learning Course Projects**
  Introduced community based learning environmental and educational projects in the courses taught.
  Sample Student Projects:
  - Mapping the Quality of Air, Drinking Water and UV level in the Greater Cairo area: Map
  - Educational Multimedia: Blue Skies Again (Impact of Atmospheric Pollution) | The Universe Through Culture and Time | The Elements of Life | The Uses of Satellites | Water & Sustainability | Life Cycle of Stars | How do we Think? Neuro-Transmission | The Life of Stars | Happy Planet Index | The Ozone Layer | The Evolution of Life on Earth & Global Warming | Egypt Then and Now | The Future of Life
  - Building hands-on and illustrative exhibits and demos, e.g. solar and lunar eclipse models, human sundial. Examples in this exhibit.

Research and Creative Endeavors

- **Areas of Expertise and Interest:** Astrophysics, Earth Science, Informal Science Education and Communication

- **Selected Publications and Authorships** (a longer list is available at Research Gate and Google Scholar)
  Submitted
  - Long-term, High Resolution Survey of Atmospheric Aerosols over Egypt with MODIS onboard NASA's Aqua Satellite. Abstract
  - Influence of Land-Surface Parameterization on Desert Aerosols Emission with regional climate model. Abstract

Published

- PEER Project Annual Report. Link. (Password-protected document. Request access by e-mail)
- The X-ray Spectrum of the Black Hole Candidate Swift J1753.5-0127. Link | PDFDiscovery of
- Quasi-Periodic Oscillation from Magnetar Emission. Link | PDF | Press Coverage
- Gamma-ray Observations of the Magnetar Candidate SGR 0501+4516. Link | PDF
- Discovery of a Transient Magnetar. Link | PDF | NASA Press Release
- Science Magazine Invited Editorial on Informal Science Education. Link | PDF
- Nature (Middle East Section) Contributed Editorial on Science Communication. Link | PDF
- National Geographic Arabic Edition Article on Solar Eclipses. PDF
- The Continuum and Line Spectra of SGR 1806-20 Bursts. Link | PDF
- On the Iron Interpretation of the 6.4 keV Emission Line from SGR 1900+14. Link | PDF
- X-ray Bursts from the Transient Magnetar XTE J1810-197. Link | PDF
- Evidence for Proton Cyclotron Resonance from SGR 1806-20. Link | PDF
- Discovery of Cyclotron Resonance Features from SGR 1806-20. Link | PDF
- Discovery of a 6.4 keV Emission Line in a Burst from SGR 1900+14. Link | PDF | NASA Press Release
- An Unusual Burst with Pulsating Emission from SGR 1900+14. Link | PDF

- **Grants Awarded**

  As Principal Investigator

  - A 3-year (2013-2016) Climate and Earth Science research project awarded by the U.S. National Academy of Sciences (NAS) and funded by USAID and NSF. Project Page at NAS | website | TV interview | Project video
  - Science Education project (Science Bus) awarded and funded by USAID (2011-2013). Press Coverage 1 | 2 | 3. web.
  - Organization of a conference grant from the Egyptian Academy of Scientific Research and Technology (2010). Workshop title: Data Analysis with NASA Fermi Gamma-ray Mission (2010). website
  - Organization of a conference grant from the Egyptian Academy of Scientific Research and Technology (2010). Workshop title: Capacity Building Workshop on Remote Sensing and GIS (coverage | TV interview)
  - Fulbright Scholar Grant from the Fulbright Commission at Massachusetts Institute of Technology 2008-2009
  - Organization of a conference grant from the Egyptian Academy of Scientific Research and Technology with Dr. J. Grindlay of Harvard Univ. (2008-2009). Conference title: Frontiers of Space Astrophysics (website)
  - Organization of a conference grant from the Committee on Space Research (2007-2008). Conference title: Space Astrophysics with NASA and ESA Missions (website)

  As Co-Principal Investigator

  - Organization of a conference grant from NSF with Dr. Jonathan Grindlay of Harvard Univ. (2008-2009). Conference title: Frontiers of Space Astrophysics: Neutron Stars and Gamma Ray Bursts (website)

  As Co-Investigator

  - US-Egypt Climate Science and Remote Sensing project titled *Characterization of North Africa Aerosols and Precipitation Patterns Influencing Egyptian Climatology* (PI: Dr. Magdy Abdel-Wahab of Cairo Univ. 2011-2013)
  - Science Education project led by the MIT Museum and funded by NSF to establish Science Festivals. PI is Dr. John Durant of MIT (2010-2012). Invited editorial about the project in Science Magazine

- **Organized Conferences and Workshops**
  - National Capacity Building Workshop on Earth Science: Remote Sensing and GIS in collaboration with Dr. Farouk El Baz, 2010, Coverage Article | TV interview
  - Capacity Building Workshop on Data Analysis with NASA Fermi Gamma-ray Mission, 2010. website
  - International Conference on Space Astrophysics in collaboration with Harvard Univ., 2009. website
  - Lecture tour by NASA Astronaut Jeffrey Hoffman and International Astronomical Union President Robert Williams (first visit of a NASA astronaut and IAU President to Egypt), 2009. Event Announcement | News Coverage

- Regional COSPAR Capacity Building Workshop on Space Astrophysics with NASA and ESA Mission, 2008. website
- US-Egypt Workshop on Science Communication, 2012. Program 1 | 2 . Press Coverage

- **Undergraduate Research**
  - Established an annual summer internship program for Egyptian students at Harvard University Center for Astrophysics and co-mentored them with Dr. J. Grindlay of Harvard University. Photos | video interview | illustration of a project
  - Supervised and mentored undergraduate students projects and graduation theses (sample projects)

- **Student Supervision**
  - 16 Undergraduate students mentored in graduation theses, Harvard Visiting Program, grant projects, and course projects. One student received the MIT Arab Student Award
  - 6 MSc Theses (all awarded)
  - 3 PhD Theses (2 awarded, one expected 2016)
  - The following students are in Ph.D. programs at the following institutions:
    Harvard University (Mohamed Zaghoo), Cambridge Univ. UK (Ahmed El Mezini), Max Planck Institute (Mahmoud Hanafy), Univ. of Manitoba, Canada (Harsha Kumar)

- **Selected Invited and Contributed Conference Presentations and Colloquia**
  - "Nuclear Science Education", (**invited**), Egyptian-Russian Workshop on Nuclear Sciences, 2-5 March 2015 (link)
  - "Magnetar Bursts and Flares", (**Invited**) New York University Abu Dhabi, UAE, 2014 (link)
  - "The New Universe Revealed by Space Observatories", (**Invited**) American University in Sharjah, UAE, 2014 (link)
  - "Atmospheric Pollution and Air Quality: Science, Education, and Policy", (**invited**) Egyptian National Committee on Space Science and Technology, Academy of Scientific Research and Technology, Cairo, Egypt, Oct. 2014
  - "Breakthroughs in Astronomy and their Impact to Science & Technology", (**Invited**) Sultan Qaboos University, Oman, 2014
  - "High Energy Astrophysics" (**Invited**) Zewail City of Science and Technology, Egypt, 2014
  - "Earth Observation and Climate Science for Sustainable Development: A Capacity Building Approach", Arab-American Frontiers of Science, Engineering, and Medicine Symposium, Muscat, Oman, 2014
  - "Space- and Ground-Based Investigation of Atmospheric Aerosols and their Impact on Climate Over Egypt" (Contributed), 7th ICTP Workshop on the Theory and Use of Regional Climate Models, International Center for Theoretical Physics, Trieste, Italy, 2014, Conference website, Conference Program
  - "What Environment is Required to Fulfil the Role of a Scientist?" (**Invited**), Euro-Science Open Forum, Career Program, Copenhagen, Denmark, 2014. Session website, Conference website
  - "Sharing the Universe" (**Invited**), The First Doha International Astronomy Conference, Qatar Foundation, Doha, Qatar, 2013. Conference website. Conference Program.
  - "Space Technology for Sustainable Development" (Invited), Egyptian-Italian Science Forum, Rome, Italy, 2012
  - "Peer Review: Meeting the Challenge", (**Invited**) Euro-Science Open Forum, Career Program, Dublin, Ireland, 2012. Session website, Conference website. Conference Program. Press Coverage in Nature, Middle East section.
  - "Scientists Say … 'but how do they know?", (**Invited**) Euro-Science Open Forum, Career Program, Dublin, Ireland, 2012. Session website, Conference website. Conference Program.
  - "Astronomy as an Enrichment to STEM Education" (Contributed), International Astronomical Union General Assembly, 2012, Beijing, China. Conference website.
  - "Cultivating Better Citizenship with Science Communication" (Contributed), American Association for the Advancement of Science Annual Meeting, Washington D.C., USA, 2011.
  - "Spectral-Temporal Correlation in SGR 1900+14 Bursts", (Contributed), Aspen Center for Physics, Colorado, USA, 2009

Service, Outreach, and Advisory Roles

- **Areas of Expertise and Interest:** Student Life, Community Outreach, Scientific Literacy

- **Initiatives Conceived**
  - **National Science Month**
    Endorsed by the ministry of scientific research and starting in 2014, the month of March was declared as national science month: a celebration of science and technology through popular and specialized events and activities at various Egyptian universities and research centers.
    Description | Newspaper Coverage, link 2 | Opening Photos
  - **Cairo Science Festival**
    Egypt's first annual science festival that started in 2010 in partnership and concurrent to the Cambridge Science Festival by MIT. The festival attracted luminary figures such as: Dr. Farouk El Baz (2010, 2014), Dr. Magdi Yacoub (2011 | link 2), Dr. Mostafa El Sayed (2012), Dr. Ahmed Okasha, Dr. Bruce Alberts (2013).
    Sample Press Coverage: 1, 2, 3, 4, 5, 6, 7. TV Interview with Dr. Farouk El Baz
  - **Astronomical Observations**
    Telescope stargazing and Astronomical observations of events and phenomena such as Solar Eclipses 1 | 2 | 3, Lunar Eclipses 1 | 2, 3, Planetary Oppositions (Jupiter, Mars) and Transits (Venus), Equinoxes and Solstices link 2, Moon at Closest Approach (super-moon), Comets and Asteroids.
    Sample Press Coverage: 1, 2, 3, 4, 5, 6
    TV Coverage and interviews: 1, 2, 3
  - **Science Radio Program**
    Scientific literacy program on national radio that presented a voyage to the wonders of the universe, nature, and our science heritage
    Poster | Sample Episodes | Episode with Dr. Farouk El Baz | Press Coverage | TV Coverage
  - **Science Bus Project**
    A mobile science exhibit that offers informal science education at schools and public places.
    Press Coverage 1 | 2 | 3. web.
  - **Informal Science Education Courses in Astronomy, Aviation, Amateur Radio, and Scuba Diving**
    Developed a set of hands-on summer courses for youth on astronomy, aviation, amateur radio, and scuba diving.
    Photos: Astronomy 1 | Aviation 1, 2 | Amateur Radio 1 | Diving 1, 2
    Press Coverage

- **International**
  - International Physics Olympiad, Team Leader of the Egyptian National team during 2017 and 2018 (the team received two silver medals in 2017 and one bronze medals in 2018)
  - 2016- 2018: Euro-Science Open Forum (ESOF 2018), Toulouse, France, Member of the Programme Committee
  - 2014-2016: Euro-Science Open Forum (ESOF 2016), Manchester, U.K., Member of the Career Committee
  - 2012-2014: Euro-Science Open Forum (ESOF 2014), Copenhagen, Denmark Member of the Program Committee
  - Astrophysical Journal (Published by IOP) Impact factor 6.0, Referee
  - Advances in Space Research (Published by Elsevier), Referee
  - Inter-Academy Panel (IAP) Science Education Programme, National Focal Point (Egypt)
  - U.S. National Academy of Science, Adviser to the International Faculty Development Project on

Education about the Responsible Conduct in Sciences with Dual Use Potential, 2010 - 2012. PDF of Project Report

- **National**
  - National Council on Outreach and Scientific Literacy, Egyptian Academy of Science (ASRT), Secretary General
  - National Network on Nuclear Sciences, Egyptian Academy of Science (ASRT), Board Member
  - German Academic Exchange Service (DAAD), Member of the PhD Fellowships Selection Committee
- **University**
  - Faculty Adviser to the Astronomy Club (AUC and ZU)
  - Faculty Adviser to Society of Physics Students (AUC)
  - University-wide Outreach Committee (AUC), Chair
  - School of Sciences and Engineering Outreach Committee (AUC), Chair
  - Curriculum Committee at the School of Sciences and Engineering (AUC), Member
  - Community Based Learning Board at the American University in Cairo, Member
  - Scholarship Committee (Cultural Program), (AUC), Member

Outreach

- **Areas of Expertise and Interest:** Science Outreach and Communication, Student Life, Community Outreach
  - **Initiatives Conceived**
    - **National Science Month**

Endorsed by the ministry of scientific research and starting in 2014, the month of March was declared as national science month: a celebration of science and technology through popular and specialized events and activities at various Egyptian universities and research centers.
Description | Newspaper Coverage, link 2 | Opening Photos

    - **Cairo Science Festival**

Egypt's first annual science festival that started in 2010 in partnership and concurrent to the Cambridge Science Festival by MIT. The festival attracted luminary figures such as: Dr. Farouk El Baz (2010, 2014), Dr. Magdi Yacoub (2011 | link 2), Dr. Mostafa El Sayed (2012), Dr. Ahmed Okasha, Dr. Bruce Alberts (2013).
Sample Press Coverage: 1, 2, 3, 4, 5, 6, 7. TV Interview with Dr. Farouk El Baz

    - **Astronomical Observations**

Telescope stargazing and Astronomical observations of events and phenomena such as Solar Eclipses 1 | 2 | 3, Lunar Eclipses 1 | 2 | 3, Planetary Oppositions (Jupiter, Mars) and Transits (Venus), Equinoxes and Solstices link 2, Moon at Closest Approach (super-moon), Comets and Asteroids.
Sample Press Coverage: 1, 2, 3, 4, 5, 6
TV Coverage and interviews: 1, 2, 3

    - **Science Radio Program**

Scientific literacy program on national radio that presented a voyage to the wonders of the universe, nature, and our science heritage
Poster | Sample Episodes | Episode with NASA Apollo Program Veteran Dr. Farouk El Baz | Press Coverage | TV Coverage

    - **Science Bus Project**

A mobile science exhibit that offers informal science education at schools and public places.
Press Coverage 1 | 2 | 3 | web.

    - **Informal Science Education Courses in Astronomy, Aviation, Amateur Radio, and Scuba Diving**

Developed a set of hands-on summer courses for youth on astronomy, aviation, amateur radio, and scuba diving.
Photos: Astronomy 1 | Aviation 1, 2 | Amateur Radio 1 | Diving 1, 2
Press Coverage

  - **Personal Resources Used in Activities**

I own a growing set of physics and astronomy demonstrations, telescopes, and RC model airplanes that are utilized in the various teaching and outreach activities

- Telescopes
  - 16 inch Computerized SkyWatcher Dobsonian Telescope with GPS and GoTo system
  - 8 inch Computerized Schmidt-Cassegrain Celestron Telescope with GPS and GoTo system
  - Hydrogen-Alpha Lunt Solar Telescope with Dual Etalons and Pressure Tuner
  - DSLR full-frame camera with telescope adapters for astrophotography
  - Venuscopes and Eclipse Glasses
  - Spectrometer (telescope-mounted) and Diffraction Glasses
- Model Airplanes (Radio-Controlled)
  - 3 Fixed-wing electric trainer aircraft
  - 4 Multi-rotor aircraft
  - Spectrum radio transmitters and control units
- Two Dive Computers (Suunto and Oceanic; for planning and managing scuba dives)
- FLIR Infrared Thermal Imagers

In the News

- NASA Press Releases and Coverages 1, 2, 3, 4
- George Washington University Press Releases 1, 2, 3
- International and Regional Newspapers: Washington Times, Al-Raya, New York Times
- *Nature* Magazine 1, 2, 3 , 4, 5, 6, 7, 8
- *Science* Magazine 1, 2
- American University in Cairo Press Releases 1, 2, 3, 4, 5, 6
- Scientific American English | Arabic
- Astronomy Magazine PDF | Online
- Akhbar-Alyoum Newspaper Coverage PDF
- Al-Ahram Newspaper 1 , 2 , 3, 4, 5, 6
- Al-Youm Al-Sabea 1, 2, 3, 4
- Al-Masry Al-Youm / Daily News Egypt 1, 2, 3, 4
- Other Newspaper 1, 2
- TV interviews Vimeo | YouTube

Students in the News

- Univ. of Illinois Urbana-Champaign News: Mohamed Zaghoo
- AUC News: Sandy El Moghazi

Related Expertise and Qualifications

- Experienced with Physics and Astronomy laboratory equipments
- Experienced with telescopes (optical and Hydrogen-alpha) and astrophotography (sample observations: live_sun, moon)
- Certified Radio-Controlled Model Aircraft Pilot, including atmospheric monitoring and sampling, aerial photography and videography (sample videos: 1 | 2 | 3)
- Certified Rescue Scuba Diver and Emergency First Aid Responder; Underwater Photography by the Professional Association of Diving Instructors (video)
- Certified Amateur Radio Operator (Call Sign SU1IH, QRZ directory)
- Head of the Astronautics Committee of the Aero Club of Egypt
- Member of the board, Egyptian Amateur Radio Society