Gazing at the Stars … Illuminating the Future[1]

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Gazing at the night sky has been a source of inspiration to scientists, poets, and the general public in all cultures. Before the advent of modern entertainment, the night sky was the only show in town. It aired every day and was free to all. For thousands of years, humans relied on their unaided eyes to gaze at and to study the stars and the planets. But in 1609 a curious man by the name Galileo Galilei at university of Padua, Italy, took this practice to a new frontier by using a combination of magnifying lenses in the form we now know as the telescope. Galileo's use of the telescope opened a new window on the universe and revolutionized not only astronomy and physics but the human perception of the universe and the methodology of scientific research, through demonstrating the power of observation and experimentation and the use of the scientific method, which laid the foundation to the modern scientific revolution.

To commemorate the 400th anniversary of this milestone, the United Nations and the UNESCOO declared 2009 as the international year of astronomy, coinciding with the commendable and timely initiative by Egypt and Italy to dedicate 2009 as the year of science and technology cooperation between the two nations, which is part of Egypt's decade of science initiative, launched in 2007. Following the successful regional Capacity Building Workshop on Space Astrophysics that Egypt hosted in early 2008, the interest was high to hold a professional international meeting to enhance the interaction and collaboration between the Egyptian and regional scientists and their international colleagues. We clearly could not find a better timing.

The conference quickly emerged as a trilateral activity with strong Italian and U.S. participation. It drew 150 participants from 27 countries that were selected from over 250 applicants. The conference was held at the new campus of the American University in Cairo during March 30-April 1 and at the Library of Alexandria during April 2-4. The theme was new development and future directions of space astrophysics with special emphasize on neutron stars and gamma-ray bursts, which although are at astronomical distance from Earth, they make their presence felt through ionizing the Earth's atmosphere with their intense X-ray and gamma-ray flashes and promise to offer new insights on the behavior of light and matter at conditions that cannot be reproduced in Earth laboratories. Because the pulsed emission from these sources rivals atomic clocks in their stability, they are being utilized as beacons for next generation GPS navigation in space.

The week-long program featured 33 invited reviews, 55 contributed talks, and 65 posters. With most days running on a 9 AM to 8 PM schedule, the participants appreciated a Nile cruise, a sightseeing trip to the pyramids, an excursion to the landmarks of Alexandria, and of course a tour at the library of Alexandria. 35% of the participants were graduate students and postdocs and 10% were advanced undergraduates. The program also featured a public lecture tour by NASA astronaut Jeff Hoffman and IAU president elect Robert Williams and tutorial sessions for junior scientists on the use of recent space missions software and analysis techniques, such as the Fermi Gamma-ray Observatory that was recently launched by NASA and named after the Italian physicist and Nobel laureate Enrico Fermi. The global availability of the space missions' data and software to scientists around the globe was particularly inspiring to many junior scientists from Egypt and the region who were excited at the opportunity of working in a cutting-edge field and networking with the leading scientists from institutions such as INAF, SISSA, and university of Padua in Italy and Harvard, MIT and NASA in the U.S. The conference was an ideal platform that stimulated new ideas and joint projects.

In 1609, Galileo was among very few scientists who had the privilege of studying the universe with the new technology of his time. Four hundred years later, the new tools of exploring the universe are remarkably available to all. This will surely expand the horizons of discovery and innovation, just as the first use of the telescope did. To us in Egypt and through collaboration with our Italian and international colleagues and the generous support from the Egyptian ministry of scientific research and the academy of science, this will pave the way for Egyptian scientists to rise once again in a discipline that holds a great promise to our future and whose foundation was partly pioneered by our ancestors. The increasing interplay between modern data analysis concepts and tools in astronomy and physics and those in engineering, finance, and business makes broad spin-off benefits from such activities quite feasible and rewarding. Together with the parallel investments in other 21st century science frontiers, our transition to a knowledge-based society is inevitable.

[1] Published in the Newsletter of the Italian-Egyptian Year of Science and Technology.

- The conference website, where you can find the program, presentations, and other resources, is at www.ns-grb.org
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Conference delegation during a meeting with Prof. Hany Helal in his office

Conference participants at the pyramids

Conference participants at the library of Alexandria