International Year Astronomy 2009 and Beyond
(Report from the Khwarizmi Science Society)

The Khwarizmi Science Society (KSS) joined the initiative of celebrating 400th anniversary of first telescope-aided astronomical observation by Galileo in 1609. UNESCO and International Astronomical Union turned this event into a global cause for the popularization of Astronomy.

The KSS planned year-long activities to bring Astronomy to Pakistani public and academia. Astronomy has never been so popular in Pakistan and until today is not offered as a major discipline in any Pakistani institute (a recent exception is Hazara University). The Society’s activities attracted thousands of individuals from all walks of life. Merging Astronomy with history, archeology and wildlife was another unique experience. The activities were covered both on the national and international media. The most comforting experience was outreach program. All this was not possible without the financial support from national and international organizations and individuals. We received financial support from Emerging Nations Science Foundation (Italy), Pakistan Science Foundation (Pakistan), The Canon Foundation for Scientific Research (UK) as well as generous
support from Members. The Society also received its share of 30 Galileoscopes from the country’s share of 100, won after a competition organized by the Developing Astronomy Globally (South Africa) and following a proposal from the KSS. Now these telescopes will be distributed in different schools in Pakistan. Developing Astronomy Globally has also promised some financial support, a seed grant of Euro 1000. The Society’s IYA 2009 celebrations were another success story like many ventures in the past, the recent most feather in its cap. Below is a précis of the particular details of our activities, coverage in news papers and scientific publications, financial support, donations and collaborators.

A. List of Activities in Connection with Astronomy Years 2009-2010

1. **Usefulness of Extra Dimensions in Space-time** (Public lecture)

   27 Jan 2009

   **Venue:** University Law College, Quaid-e-Azam Campus, University of the Punjab, Lahore

   **Speaker:** Dr Pervez Hoodbhoy
   Department of Physics, Quaid-i-Azam University-Islamabad.
2. **First Falakyati Mela (Astrofest)**  
   (Public Astronomical Observation)  
   29 Jan 2009  
   **Venue:** Quaid-e-Azam Campus, University of the Punjab, Lahore  
   **Lead Astronomer:** Umair Asim

3. **Stellar Pots: Nature’s Recycling Factory** (Popular lecture)  
   27 Feb 2009  
   **Venue:** Department of Physics, Quaid-e-Azam Campus, University of the Punjab, Lahore  
   **Speaker:** Dr Jamil-un Nabi Ghulam Ishaq Khan Institute, Topi (Swabi)-Khyber Pakhtoonkha

4. **Second Falakyati Mela (Astrofest)**  
   (Public Astronomical Observation)  
   09 Mar 2009  
   **Venue:** Govt. High School Number 01. Phoolnagar, District Kasur  
   **Lead Astronomer:** Umair Asim
5. **Third Falakyati Mela (Astrofest)**  
(Public Astronomical Observation)  
06 Apr 2009  
District Public School and College,  
Okara, District Okara  
**Lead Astronomer:** Umair Asim

6. **Fourth Falakyati Mela (Astrofest)**  
(Public Astronomical Observation)  
30 May 2009  
Rohitas Fort (The World Heritage Site), District Jhelum  
**Lead Astronomer:** Umair Asim

7. **Fifth Falakyati Mela (Astrofest) and Science Quiz**  
(Public Astronomical Observation)  
28 Sep 2009  
Govt. Girls Higher Secondary School, Shahdara, District Lahore  
**Lead Astronomer:** Umair Asim

8. **Sixth Falakyati Mela at the World Space Week**  
(Public Astronomical Observation)  
05-06 Oct 2009  
Gulshan-e-Iqbal, Lahore  
**Lead Astronomer:** Umair Asim
9. **Seventh Falakyati Mela (Astrofest)**  
**Live Viewing of the 2010 Solar Eclipse**  
(Public Astronomical Observation)  
15 Jan 2010  
Quaid-e-Azam Campus,  
University of the Punjab, Lahore  
**Lead Astronomer:** Umair Asim

10. **Eighth Falakyati Mela (Astrofest)**  
(Public Astronomical Observation)  
19 Feb 2010  
GIK Institute, Topi,  
Khyber-Pakhtoonkha  
**Lead Astronomer:** Umair Asim

11. **High Energy Astrophysics and the Origin of Cosmic Rays**  
(Popular lecture)  
21 May 2010  
Quaid-e-Azam Campus,  
University of the Punjab, Lahore  
**Speaker:** Dr Yousuf Butt  
Harvard-Smithsonian Centre for Astrophysics-USA.
B. Coverage

1. “Celebrating Astronomy” appeared in:

2. “Falakyati Melay” (in Urdu) appeared in:

3. “Pakistani Astronomers Shine a Light on the Sky” KSS Astronomy gatherings covered by:
     http://physicsworld.com/cws/article/indepth/41232

4. “Astronomy: Pakistan’s New Future” President KSS’s article appeared in:
     http://www.aps.org/publications/apsnews/201001/international.cfm
C. Funding

1. **Emerging Nations Science Foundation, Trieste-Italy**
   - USD 3500.00
2. **Pakistan Science Foundation, Islamabad-Pakistan**
   - PKR 50,000.00
   - GBP 300.00
4. **Contribution from an individual, Lahore-Pakistan**
   - PKR 40,000.00
5. **Developing Astronomy Globally Cornerstone, Cape Town-South Africa** (to be received)
   - EUR 1000.00

D. Equipment Donations

1. **30 Galileoscopes** from **Developing Astronomy Globally Cornerstone, Cape Town-South Africa**
   - Will be distributed in the schools for the school children’s use
2. **Meade Reflector** (Telescope 114 mm) from **Dr Faisal Sultan, CEO, Shaukat Khanum Cancer Hospital and Research Centre, Lahore-Pakistan**
   - Will be used for astronomical observations by KSS for general public and students
3. **Optical Microscope (100X)** from **Dr Shaista Perveen and Dr Nusrat Malik United States**
   - Will be used in science exhibits for general public and school children

E. Collaborators in Miscellaneous Events
1. Himalayan Wildlife Foundation, Islamabad-Pakistan
2. Lahore Astronomical Society (LAST) Lahore-Pakistan

Pakistani astronomers shine a light on the skies

Dec 14, 2009 (Physics World Online)

http://physicsworld.com/cws/article/indepth/41232

Saadat A Siddiqi and Muhammad Sabieh Anwar describe how a series of astronomy events in Pakistan over the past year could help to boost the public’s interest in the subject

As the International Year of Astronomy (IYA2009) draws to a close, hundreds of organizations around the world can look back on a hugely successful last 12 months celebrating our understanding of the universe. There have been events all over the globe, including in Pakistan, where the Khwarizmi Science Society (KSS) – one of the country’s most active grass-roots science associations – has held numerous "astrofests", or falakyati melas, as they are known in Urdu. The astrofests are the society’s latest initiative in popularizing science and bringing modern scientific knowledge to remote and far-flung areas of the country.

The KSS, which was founded in 1997, seeks to promote science in Pakistani universities by holding seminars, workshops, field visits, conferences and panel discussions for undergraduate and research students. However, the society also recognizes that most Pakistani students entering university are not adequately prepared for the rigours of advanced physics. Without doubt, the country needs a massive
overhaul of the way science and physics are taught in primary and secondary schools: the current approach is based largely on textbooks, with little or no emphasis on real scientific activity.

It was in an attempt to promote science in schools and among the general population that the KSS decided to take part in the IYA2009. Our idea was to build a roving observatory and use astronomy as a means of promoting science education in distant and rural schools by showing students – and, just as importantly, their teachers – that science can indeed mesmerize and inspire. It was an approach that proved a real success.

**Seeing the Moon**

One evening in April, for example, we held a live astronomical observation of the Moon, Jupiter, Saturn and Venus at the Okara District Public School and College in the Punjab, which drew over 2000 men, women and children to an event that was transformed into a festive carnival by the school headmaster. To bring these heavenly bodies "live" to our enthralled audience, we simply connected our 14-inch Schmidt-Cassegrain Celestron telescope's eyepiece to a high-resolution CCD camera and projected the resulting images onto multimedia screens.

While the astronomers – led by Umair Asim, an astronomer by passion and school teacher by profession – were setting up their equipment, Okara's headmaster Mazhar Hussain arranged an impromptu competition in which attendees were invited to recall verses from Urdu literature about the Moon, which is a popular poetic icon and used as a simile for the beloved.

Once their gear was up and running, the audience were delighted at what they saw, although the lunar craters surprised many who were used to the Moon's established literary image! The magnificent rings of Saturn certainly grabbed everyone's attention and older people were particularly delighted as they were shown various stellar constellations that matched their horoscopes.

![Modern and ancient melas have also been arranged in Lahore's Punjab University and at a large school in Phoolnagar, some 70 km from the provincial capital Lahore. These events have attracted several](image-url)
thousand schoolchildren and our most inspiring mela took place in September in an all-girls school in Shahdara, along the banks of the river Ravi. We have so far organized eight astrofests, travelling throughout the country with our mobile observatory, each time focusing on different celestial bodies, notably the Moon and the planets.

The response has been so overwhelming that we have now decided to extend these activities into 2010. Luckily, we have now added an optical microscope to our gear and plan to show our enthralled spectators, a glimpse of the microbial world alongside the heavenly macrocosm.

**Mouths wide open**

It has been a real delight seeing parents, teachers, children, housewives and toddlers, all sitting together, mouths wide open, reveling in the magnificent views of lunar shadows, craters named after Arab scientists (Albatenius, Averroes, Alberuni), the mythical Pleiades, the tilt of the Saturn rings, and Jupiter's awe-inspiring moons. Schools have even sent out invitations to nearby schools, while in remote areas – where the internet is virtually non-existent – we use the local mosque loudspeaker to announce the festivals.

Most of our audiences will never have looked through a telescope before and we believe that even these brief moments of bliss can have a lasting impact on their thoughts, hopes and choices. In particular, we hope that our events will encourage schoolchildren to choose careers in science, astronomy and physics and are glad that many of them asked our team questions about careers in Pakistan's space agency (SUPARCO) as well as in NASA.

**We wanted to use astronomy [to show] that science can mesmerize and inspire**

Perhaps the most memorable event took place on 30 May, which saw a gathering of about a thousand local residents and tourists at the historic Rohtas Fort in Jhelum, a couple of hours’ drive north of Lahore. The fort, which was completed in 1547, is a blend of Indo-Afghan architecture and a UNESCO World Heritage Site. One of the gates inside the Fort is the Suhail Gate, named after the star bearing the same Arabic appellation (it is known as Lambda Velorum in modern catalogues). Interestingly, there is a saintly dervish with the name Suhail Bukhari who is now buried at the gate, epitomizing the confluence of science and tradition that has shaped the country.

**Poetry please**

Through the KSS outreach activities, we have found that physics and astronomy can be best introduced to the general public if these subjects are placed in their wider cultural and social contexts. For example, our wonderful astronomer Umair Asim freely uses the local vernacular (Punjabi) as well as Urdu in his demonstrations. Moreover, we have found that recitations of poetry during breaks in the events help to attract people who, in most cases, have refined tastes for poetry and music.
Seeing the stars

Our society's events can also help to educate Pakistani people about science, people who are often poorly informed by the media. For example, the solar eclipse that took place on 23 July this year saw the media reporting many silly superstitions associated with such natural phenomena, such as the claim that pregnant women needed to be protected from the evil influence of an eclipse, or that an eclipse can heal the disabled.

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In that vein, the society now plans to produce some short, simple pamphlets explaining natural phenomena such as eclipses, tides, seasons and phases of the moon for parents and children. The latter is particularly important in the context of moonsighting, which marks the start and end of the Islamic months and also the occasion of the religious Eid festivals, whose timing has now become a source of dispute in the country.

In the coming months, the Khwarizmi Science Society plans to continue its scientific festivities and *falakyati melas* with even greater vigour in a bid to entice and incite the minds and hearts of the astronomers and physicists of the future.

**About the author**

Saadat Anwar Siddiqi is president of the Khwarizmi Science Society and a professor at the Centre for Solid State Physics, Punjab University, Lahore, Pakistan. Sabieh Anwar is assistant professor of physics at the LUMS School of Science and Engineering in Pakistan.
فلكيات ميلی
Celebrating astronomy

(The News on Sunday 05 April 2009)

The Khwarizmi Science Society is holding a series of Falakayati Melas in the province. The year 2009 has been marked as the 'International year of Astronomy' by the Unesco

By Suleman Sami Qazi

Creativity and thirst for knowledge lie dormant within us. Akin to a seed that will not sprout unless it is watered, our fertile minds will lie barren unless they are stimulated by the pursuit of knowledge and the joy of discovery. Since its founding in 1997 by Professor Saadat Anwar Siddiqi of Punjab University, the Khwarizmi Science Society (KSS) has been actively involved in the development of a culture of science-appreciation among Pakistan's youth.

The year 2009 has been marked as the 'International year for Astronomy' (IYA) by the Unesco. This year will commemorate the impact of astronomy and science on human life. I was very happy to learn that the KSS was actively involved in bringing these stellar festivities to Pakistan.

The Society invited Professor Dr. Pervez Hoodbhoy, a distinguished professor of physics from Quaid-e-Azam University Islamabad, to deliver a popular lecture on astrophysics to kick off an extensive series of events planned to celebrate the IYA. The lecture was titled "The Usefulness of Extra Dimensions of Space-Time" and was held at the auditorium of the Environmental Law College, University of the Punjab, New Campus in Lahore.

The lecture focused on two of the greatest ideas of all time, namely, quantum mechanics and Einstein's theory of General Relativity. Dr. Hoodbhoy expounded on the dream of modern physicists to unite the four major forces of the universe into a single force and the importance of Salam's theory in making this possible. The lecture included references to valuable contributions made to this field by Professor Dr. Abdus Salam, Pakistan's only Nobel Laureate. The event was well attended by people of all ages and from all walks of life.

Another innovative activity being regularly organised by the Society are the 'falakayati melas' or Astrofests. Ever since man set foot on earth he has looked up at the sky with a mixture of awe and amazement. Through the ages, celestial events like comets, shooting stars (meteors) and eclipses have evoked fear and superstition. Ultimately such negative sentiments stem from a fundamental fear of the unknown and an inability to understand the scientific causes of astronomical phenomenon. Who hasn't heard of the famous account of Christopher Columbus, reading from his astronomical charts and aware of an impending lunar eclipse, claimed to control the hand of god and terrified the ignorant natives of America into acceding to his demands. However, any attempt to re-enact the same chicanery today would be less than successful; the lesson has stood the test of time. Any nation that turns its back to science and rationality would end up being dominated by more advanced societies. The science of astronomy is no less.
With the goal of educating the public about the objects visible in the night sky, the falakayati melas are held in the early nights of the lunar months, when the light from the moon is not too bright and distracting. Modern telescopes and night charts allow the public to see with their own eyes, the wonders of the skies.

The first of these melas was organised on January 29 in the lush green fields of Punjab University New Campus. I was very happy to be a part of this event. The festival was a unique combination of socialisation and scientific pursuit. People gathered at the event had the opportunity to sight the zodiac constellations, the awe-inspiring lunar craters named Theophilus, Cyrillus, Hypatia and Ibn-e-Rushd; the Apollo 11 landing site, the beautiful planet Venus in its phase, and the Orion nebula, often dubbed the maternity ward of stars.

Umair Asim, an executive Life member and resident astronomer at the KSS, who is one of Pakistan's most accomplished amateur astronomers was the focal person at these events. He used his remarkable computerised 14 inch telescope to project mind and soul-lifting images of the celestial bounties. The reaction of looking through the telescope for the first time is one of utter delight. Objects seen as mere blobs of white with the un-aided eye show up as majestic bounties spread out on the skies. In order to facilitate the huge number of people in attendance, the Society made arrangements for the images from the telescopes to be directly projected onto two large projector screens, so no one misses out on the fun.

Keeping in view their impact and popular appeal, the KSS has now resolved to take these melas to distant and underprivileged areas as well. Consequently, the second falakayati mela was held on the 9th of March at Government High School Number 1, Phoolnagar. Phoolnagar is the new name of Bhai Pheru, located about 50km on Multan Road, southwards from Lahore. The school has an outstanding history of producing excellent results in Board examinations. The headmaster proudly claims the fifty year old traditions of the school which currently has 1500 students and 50 teachers. Demographically, the area belongs to a deprived economic setting and most students come from poor and oppressed families where the parents cherish in their hearts, the lasting dreams of their children aspiring for strong and respectable careers.

The function was scheduled to begin at 5pm, however, the excited students had started pouring into the school's large auditorium, built with the help of the locals, since 3pm. Within an hour the auditorium was filled to its capacity of a thousand. It was a real surprise to see the enthusiasm and spirit of those young souls and the KSS team decided to start the programme almost an hour earlier than scheduled, a rare practice indeed.

Just before the start of Umair Asim’s presentation, there was a huge clamour in the hall which soon fell to a dead silence as all the young people stared with their mouths agape at the astonishing pictures of the stellar bodies being projected in front of them. Many students who were previously quibbling over seats could then not care less for them. They had to hear what the speaker was telling them, many of them were seated on the bare floor.

Umair spoke about the various galactic phenomena, the celestial violence that precedes and succeeds the creation and death of stars, the concept of light years and other similar topics. At the end of his hour-long lecture, students encircled him as if he was some much-loved celebrity and peppered him with questions. It was clear at that point, how much the lecture had inspired them and how eager those young minds were to learn more about the matters of the heavens.
Soon after the lecture, the two telescopes arranged by the KSS and the Lahore Astronomical Society (LAST) were set-up for viewing and quickly became the centre of attention for everyone. The students were prepared to spend the whole night gazing through the telescope at the night sky. The schoolchildren were shown stunning live images of the famous star cluster, the Pleiades, often referred to in Urdu literature as the Thurayya or Parveen. But to our surprise, the students were more interested not in Pleiades, the Orion Nebula or the constellation of Taurus but in our own very moon. What a sight the moon presented with its jaw-dropping scenes of craters, often obscured by randomly meandering clouds.

When it got really late and the call for the night prayers started reverberating in the silent environs of Phoolnagar, the event had to conclude. The KSS team was then allowed to pack up their things and return but not without a promise to return.

Through my attendance at these two events, my confidence in the mission of science popularisation has been greatly energized. Out of this confidence, we must derive a greater personal sense of responsibility to educate and inspire our youth with science. Our youngsters are all craving for inspiration. It is the need of the hour to present to them role models, just as our astronomers, who can play their vital role in instigating the scientific curiosity of our students, teachers and parents alike.

The vision of the Khwarizmi Science Society, as spelled out by its members and the Founder President, Dr. Saadat Anwar Siddiqi, is to see Pakistani students' transition from merely reciting science for the sake of exams into strong and independent thinkers who stand shoulder to shoulder with their international colleagues. Events such as the falakayati melas will undoubtedly encourage many would-be astronomers, physicists and biologists to shed their inhibitions and take that first bold step forward into a career of science. Eventually, it is hoped, that this will contribute to the overcoming of the extreme shortage of qualified scientists, inspirers and role models in Pakistan. (The writer is Laboratory Engineer, School of Science and Engineering, LUMS).
Organizing Committee

Chairman:

Dr Saadat Anwar Siddiqi
President, Khwarizmi Science Society
Professor of Solid State Physics, Center for Solid State Physics, University of the Punjab, Lahore.

Secretaries:

Dr Muhammad Sabieh Anwar
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