KHAGOL

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Yash Pal: A Man for Many Seasons (1926 - 2017)

In the early days of IUCAA, when we still had to find our permanent location, Yash Pal suggested that we should start an institutional newsletter. Our instinctive reaction would have been to buy time; to say to Yash to give us some time to settle down. We did not do that, for we knew that Yash was accustomed to action and not prevarication. It gave me great pleasure to hand him the first issue of Khagol and to see his delightful surprise that IUCAA had met his challenge on this occasion too.

Ever since I was invited by him to a meeting in which he aired the concept of an inter-university centre for astronomy, I came under his spell of ideas. There I came to know that provision existed for such centres of excellence in the university sector for supporting teaching and research in those subjects that were important but not adequately represented. Thus, he explained that in an IUC for astronomy, there will be centralized state-of-the-art facilities to be shared by the academics, students and teachers from universities. Rais Ahmad from the UGC, and Naresh Dadhich from the University of Pune, who were present at the meeting, also provided useful inputs to the discussion.

The IUCAA story as it developed is well known. The purpose of referring to it now is to recall the wonderful personality that we lost when Yash Pal passed away on July 24, 2017. When he took over the reins of the UGC, he brought with him valuable experience from his varied assignments like a research scientist in cosmic rays, the enabler of earth bound use of space technology, the organizer of a science and technology department for the government, etc. IUCAA was different from these, because we had to grow human resources. We had to have high quality research scientists motivated to guide budding scientists from universities as well as carrying their own research. We needed state-of-the-art facilities, an excellent library, computing facilities, and last but not the least, an instrumentation centre. Yash, of course, demanded rapid progress on all fronts, but was not ever close fisted when need for finances arose.

I recall a finance committee meeting in our first year of existence, where the Finance Adviser was recommending an across the board cut, which would have seriously hampered progress on all the above programmes. Yash in his soft voice opined: "Inko mut kaato yaar!" (Friend, do not cut these people's grant, …because they are only just starting.) The FA agreed. I could see how

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Yash got constructive projects well supported, not by order but by persuasion. A senior colleague at the UGC once said: The bright ideas come from the 'above'

(meaning Yash), …it is our responsibility to implement them.

Yash Pal was a household name because of his interaction with school students, …his replies on TV to questions from them were eagerly awaited. He was a firm believer of science communication, and regretted greatly the rise of pseudo science in public mind. For example, he was very unhappy when, a few years after his retirement, the UGC introduced astrology as a scientific discipline in universities.

But he was highly pleased to see science popularization included in IUCAA's extra-curricular programmes. He readily agreed with IUCAA's view that interest in science and inculcation of the scientific temper at the school level should pay dividend at later stage. Indeed, now and then one meets bright minds in science and technology, who recall being motivated by IUCAA's school students' programmes.

IUCAA has been fortunate in attracting young scientists of high calibre, who ensure that the centre maintains the vision of the Founder. We were indeed fortunate that Yash's comforting guidance behind the scene was available to IUCAA even after his retirement.

Jayant V. Narlikar,
IUCAA.

Yash Pal:
Scientist and a Great Leader

Yash Pal, who passed away on July 24, 2017, was a multi-dimensional personality, and had a genius to fit in many roles quite effortlessly and successfully. Starting as his Ph.D. student, I had an association with him for more than five decades. Here, I shall try to give glimpses of his person as I experienced.

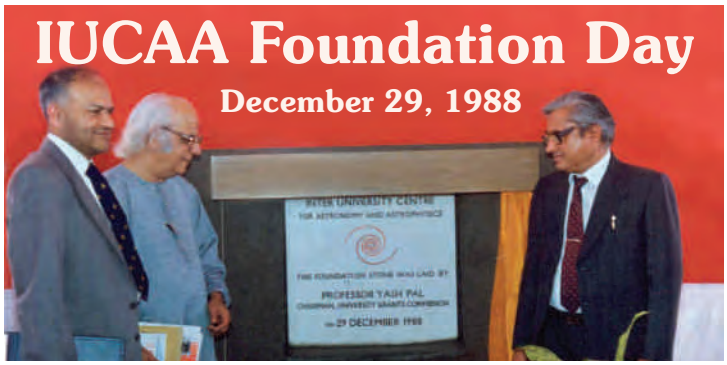
Soon after joining TIFR in 1963, I saw Yash (as he was called by his friends) from a distance and his persona, with pipe in his hand or mouth, created in me a sense of awe about him. Some weeks after joining TIFR, I met him, and started working as his Ph.D. student. In the very first meeting with him, I was put at ease by his gentle, but penetrating style of conversation. Soon I started working, along with his other students, on problems relating to composition, transport, and interactions of cosmic rays. He always encouraged innovative fresh thinking in research, and was more keen on exploring implications of new ideas as compared to working out the details. Let me mention an example of such fresh thinking: The cosmic rays travel long and varying-paths between their sources before reaching the earth, and in the process suffer many changes. The prevailing model for estimating these changes was to approximate the varying-paths by an average path. This approximation led to some trouble of inconsistencies in understanding lower energy cosmic rays. An explicit consideration of the varying-paths by our group eliminated the inconsistencies.

After a long and successful career in research at TIFR, in 1972 he took position of the Founder Director of the Space Applications Centre (SAC) of ISRO at Ahmedabad. This change was the beginning of many roles he played on the national level for development of science and technology, and remodelling of education. The first major project at this centre, called SITE, was for enabling mass education through the use of space technology. The successful completion of this project in a short three-year period required his genius for practising and encouraging innovation, inter-disciplinary vision, and management. At the SAC, the tradition of innovation and excellence was firmly implanted by him, and this centre continues to serve the country by developing state-of-the-art systems for communications and remote sensing.

He was very keen to see a major re-modelling of our education at all levels to encourage the spirit of observation and enquiry. He emphasized that in order to promote better comprehension and free thinking, it was necessary to reduce the burden of syllabi in primary and secondary schools. He was against the barriers in studying different subjects in the universities, and insisted that a full education should involve exposure to all the areas of human interest.

While making the recommendations about drastic changes in our education, he was aware of the difficulties in implanting the changes in our society. To cite an example, the report on "Learning Without Burden", in its recommendations, he makes the following remark: "But, there is a deeper malaise in our society, which impacts our young children. If we continue to value a few elite qualifications far more than real competence for doing useful things in life, and if the economic distance, between those who can manage to cross some academic hurdles and those who can't, continues to widen, we will probably continue to spend our effort in designing hurdles instead of opportunities for children to learn with joy."

For a man with so many achievements, he appeared surprisingly easy going. With his gift of humanism, egalitarianism, very broad and



tolerant outlook, and generosity, he was able to connect easily with people of all ages with different backgrounds and occupations. On several occasions, my whole family and I had the good luck to have Yash and Nirmal (his wife) in our home. During these visits, we enjoyed his sessions on science-communication, which were like mini-versions of the very popular TV show, "Turning Point". He is gone but his values and wisdom remains to guide us.

Shyam N. Tandon,
IUCAA.

Professor U.R. Rao, Pioneer of India's Space Programme

Professor Udupi Ramachandra Rao (popularly known as U.R. Rao), one of the pioneers of India's space programme, passed away on July 24, 2017 at the age 85. Professor Rao chaired the Indian Space Research Organisation (ISRO) for a decade since 1984. He authored nearly 350 papers on diverse scientific and technical areas, spanning Cosmic Rays, Interplanetary Plasma, X-ray and Gamma-ray Astronomy, Space Applications, as well as Satellite and Rocket Technology.

Professor Rao received his post-graduate degree from the Banaras Hindu University, and was then a member of faculty at the Massachusetts Institute of Technology (MIT) and the University of Texas at Dallas in the USA during the 1960s. He returned to India to join the Physical Research Laboratory, Ahmedabad as Professor in 1966, and in 1972 moved to ISRO Satellite Centre, Bengaluru. He led the development of India's first satellite Aryabhata, which was launched in 1975. Among many other instruments, this first Indian satellite also carried a payload for X-ray Astronomy, an activity close to his heart. He remained at the helm of India's satellite programme, and helped develop many more satellites that followed.

As the chairman of ISRO, Professor Rao spurred the growth of launch vehicle development. Under his stewardship, the ASLV and PSLV rockets took shape, and he played a major role in the development of the GSLV and its cryogenic engine.

Professor Rao received many awards and honours, including doctorate degrees from 25 universities around the world, and induction into the Hall of Fame of International Astronautics Association and the Satellite Hall of Fame of the Society of Satellite Professionals International. He was conferred Padma Bhushan in 1976 and Padma Vibhushan in 2017 by the Government of India.

Professor Rao continued to remain closely associated with ISRO activities. Most notably, he chaired the Advisory Committee for Space, which guided the planning and development of future missions and activities of ISRO. IUCAA's association with space projects, including the AstroSat and the Aditya - L1 missions, became possible due to his critical advice, help and support. For this, IUCAA remains grateful to him. His visionary approach, strong support for science missions and pragmatic guidance will be sorely missed.

Dipankar Bhattacharya,
IUCAA

Refresher Course on Astronomy and Astrophysics

The biennial Refresher Course in Astronomy and Astrophysics for College and University Teachers was held during May 15 to June 15, 2017 at IUCAA. There were about 32 teachers from different parts of India. The course introduced the participants to Astronomy and Astrophysics through a series of lectures, delivered by faculty members of IUCAA as well as from other institutions, with topics ranging from basic concepts to cutting edge research. The IUCAA Sci-Pop team organised a demonstration of night-sky watching programme for the participants, and sessions on using small telescopes for basic Astronomy and Astrophysics teaching. The course also included sessions on computing and astronomical data analysis techniques. The participants were taken on a tour to the GMRT facility. The participants were very enthusiastic throughout the course, and actively participated in the lectures and hands-on sessions, by engaging in lively discussions with the lecturers. The scientific, technical and administrative staff of IUCAA played a vital role in ensuring that the course ran smoothly. Santosh Khadilkar and V. Chellathurai, in particular, managed a significant part of the administrative work. The faculty coordinator for the refresher course was Aseem Paranjape.

Vacation Students' Programme

The annual Vacation Students' Programme (VSP) was held during May 15 to June 30, 2017 at IUCAA. There were 14 students from various colleges/universities/institutes. The screening committee had a tough task to select the participants from a large number of online applications. Along with lectures on basic and advanced astronomy (held in common with the Refresher Course), the students worked on individual projects with faculty members and post-doctoral fellows of IUCAA, with topics covering a broad range of subjects across observational, instrumentational and theoretical aspects of Astronomy and Astrophysics. The students were also taken on a tour to the GMRT facility operated by the NCRA. The students enthusiastically participated in the programme, and presented their project work in seminars held at the end of the session. R. Srianand was the faculty coordinator of this programme.

Congratulations to ...

Jayant V. Narlikar, for the ***Lakshmipat Singhania - IIM, Lucknow National Leadership Award 2016-2017*** at the hands of Honourable President of India.

Shyam N. Tandon, for the ***Space Science and Applications Award presented by Astronomical Society of India*** for the success of the UVIT project.

Workshop on Data Intensive Science

During the last two decades, the role of data in all spheres and disciplines has grown by several orders of magnitude. Thanks to better instruments, easy accessibility to networking and computation methods, data are getting accumulated at an extraordinarily fast rate. This has naturally led to a paradigm shift in all spheres requiring the average user of the data to be adept at mining the data, processing and managing them. The sheer volumes of these data are so huge that conventional solutions prove to be inadequate.

The Workshop on Data Intensive Science was a joint attempt of IUCAA and Persistent Systems Ltd. (PSL), Pune, to empower the participants with tools and techniques in data science. This workshop was held during February 13 - 18, 2017 at IUCAA, and there were 60 participants, with almost half of them from astronomy research backgrounds, and the rest were from the local engineering colleges. The topics covered included Python programming language, databases, numerical techniques, machine learning techniques, and big data technology. The workshop had both theory as well as intensive lab sessions, and enabled a very fruitful interaction between higher level researchers in astronomy and engineering students, who were at crossroads in their career, contemplating on future directions.

The workshop was coordinated by Ajit Kembhavi and Kaustubh Vaghmare from IUCAA, and Anand Deshpade and Shubhangi Kelkar from PSL.

IAU-EC99@IUCAA

The Executive Committee of the International Astronomical Union (IAU) had its 99th annual meeting at IUCAA during May 8 - 12, 2017. The IAU was founded in 1919, and is headquartered in Paris. Its mission is to promote and safeguard the science of astronomy in all its aspects through international cooperation. It has 12,662 individual members from 101 countries, and 282 of these are from India. The IAU has a General Assembly every three years, and supports prestigious symposia and other professional meetings all through the year. The IAU awards prizes, and supports educational and public outreach activities and the use of astronomy as an instrument for overall development all through the world. The IAU has an Office for Astronomy for Development at Cape Town, and an Office for Astronomy Outreach at Tokyo, which are actively engaged in furthering the aims of the IAU internationally.

Among the important tasks of the IAU are the definition of fundamental astronomical and physical constants, unambiguous astronomical nomenclature, promotion of educational activities in astronomy, and informal discussions on the possibilities for future international large-scale facilities. Furthermore, the IAU serves as the internationally recognized authority for assigning designations to celestial bodies and surface features on them.

Persons who attended the Executive Committee meeting included Silvia Torres-Piembert, who is the President of the IAU and Piero Benvenuti, the General-Secretary. In addition to the eleven Executive Committee members, seven Division Presidents of the IAU were also present at the meeting.

Several interesting events were organised at IUCAA during the EC meeting. These included (i) A Round-Table for Women Astronomers, (ii) A presentation of Public Outreach Activities carried out by IUCAA, the Astronomical Society of India, and the Jyotirvidya Parisanstha, (iii) A Public Lecture by Ewine van Dishoeck of the Leiden Observatory, The Netherlands (who is the President-Elect of the IAU), titled Building Stars, Planets and the Ingredients for Life in Space, and (iv) A Colloquium by Bruce Elmegreen of the IBM Thomas J. Watson Research Centre in the USA, titled Galaxy Thick Disks. The meeting was coordinated by Ajit Kembhavi, from IUCAA and Vice-President of IAU.

Workshop on AstroSat Data Analysis

The IUCAA sponsored Workshop on AstroSat Data Analysis was organized by the Department of Physics, Tezpur University, during May 3 - 5, 2017. The main aim of this workshop was to provide a hands-on experience of data analysis to the participants. There were 46 participants from all over the country, majority from the north-eastern region.

The lectures were on topics related to AstroSat by Ranjeev Misra, Anjali Rao, Amit Pathak and Pranjupriya Goswami. The emphasis of the workshop was to provide hands-on experience to the participants, and they used HEASOFT and packages within to understand the physics of Pulsars and Black Holes. The hands-on sessions were coordinated by Ranjeev Misra and Anjali Rao.

The participants of the workshop had an unique experience of handling AstroSat data. On the last day of the workshop, an assignment session was organized, where participants were asked to analyze a new set of data. Feedback from the participants was encouraging. The participants wanted to attend more such workshops with extensive hands-on sessions. The workshop was coordinated by Rupjyoti Gogoi and Amit Pathak from the Department of Physics, Tezpur University.

Workshop on Astronomy and Astrophysics: Recent Trends and Scopes

The one day workshop, held at the Department of Physics, Assam Kaziranga University, Jorhat, was organized jointly with IUCAA on May 6, 2017, to provide a flavour of astronomy to the under-graduate and post-graduate students. The participants were from the host university as well as from the nearby institutions. The total number of participants were more than 100. There were six lectures delivered by Ranjeev Misra (IUCAA), Anjali Rao (IUCAA), Gazi A. Ahmed, Amit Pathak, Rupjyoti Gogoi, and Pranjupriya Goswami (all from Tezpur University). The lectures were delivered on AstroSat, Stars, Light Scattering, Interstellar Medium, Black Holes and Blazars.

Meeting on LIGO - India: The Road Ahead (LITRA - III)

The third meeting in the LIGO-India: The Road Ahead (LITRA) series was held at IUCAA, during March 27 - 28, 2017. There were 33 participants. The primary purpose was to consolidate the progress of the working groups set-up at LITRA - II (December 2016) to help the process of building and commissioning LIGO - India, and to carry out research for designing the next generation detectors beyond Advanced LIGO. Frederick J. Raab (Associate Director for Operations, LIGO, USA) and Dave Reitze (Director, LIGO, USA) shared their experiences. There were presentations and discussions by individual working groups: Sabareesh Rajshekhran (BITS-Pilani, Hyderabad) on Wind Studies, Vivishek Sudhir (EPFL) on Quantum Noise Limited Measurements, Umakant Rapol (IISER- Pune) on 1 um Squeezed Light, Supratic Chakraborty (Saha Institute of Nuclear Physics, Kolkata) on Mirror Coatings, Anil Prabhakar (IIT-Madras, Chennai) on Optical Levers, Deepa Venkitesh (IIT-Madras, Chennai) on 2 um Laser, Joyee Ghosh (IIT, Delhi) and Bhaskar Kanseri (IIT, Delhi) on 2 um Squeezed Light, Ranjana Mehrotra (CSIR-NPL, New Delhi) on NPL Facilities, and Rachel Kalpana Kalaimani (IIT-Madras, Chennai) on Control Systems. Also there were closed door meetings of LIGO-India Science Management Board members with Dave Reitze and Frederick J. Raab. Sukanta Bose, Sanjeev Dhurandhar, Ajit Kembhavi, Sanjit Mitra, Somak Raychaudhury, and Tarun Souradeep (all from IUCAA) were the organizers.

LIGO - India: The Road Ahead (LITRA - IV)

The fourth meeting in the "LIGO-India: The Road Ahead" (LITRA) series was held at IUCAA, during May 15 -16, 2017. The primary theme of this meeting was Gravitational Wave Data Analysis and Detector Characterization. There were about 40 participants from all over the country. Invited speakers and panelists from outside of IUCAA were: B. S. Sathyaprakash, P. Ajith, and Bala Iyer on "Physics and Astronomy with Gravitational Waves", Peter Saulson and Umakant Rapol on "Gravitational Wave Instrumentation and Detector Characterization", Tjonnie Li, Rajesh Nayak, B. C. Joshi, and Nathan Johnson-McDaniel on "Characterizing Gravitational Wave Sources and their Populations", and Leo Singer, Varun Bhalerao, and Poonam Chandra on "Multi-messenger Astronomy with Gravitational Waves".

From IUCAA, Sukanta Bose, Sanjeev Dhurandhar, Ajit Kembhavi, Sanjit Mitra, Somak Raychaudhury, and Tarun Souradeep were involved as panelists or organizers.

This meeting was funded by the Navajbai Ratan Tata Trust, Mumbai.

Colloquia

20.04.2017

Bryan E. Penprase and Bidushi Bhattacharya on *Island universe - Astrophysics and space tech in Singapore.*

12.05.2017

Bruce Elmegreen on *Galaxy thick disks.*

Seminars

05.04.2017

Surhud More on *Halo assembly bias and the splashback radius of galaxy clusters.*

26.04.2017

Atish Kamble on *Radio supernovae: STIRRING the relics of progenitors.*

03.05.2017

Marcello Musso on *Excursion sets, peaks and other creatures: Improved analytical models of LSS.*

Neem Seminars

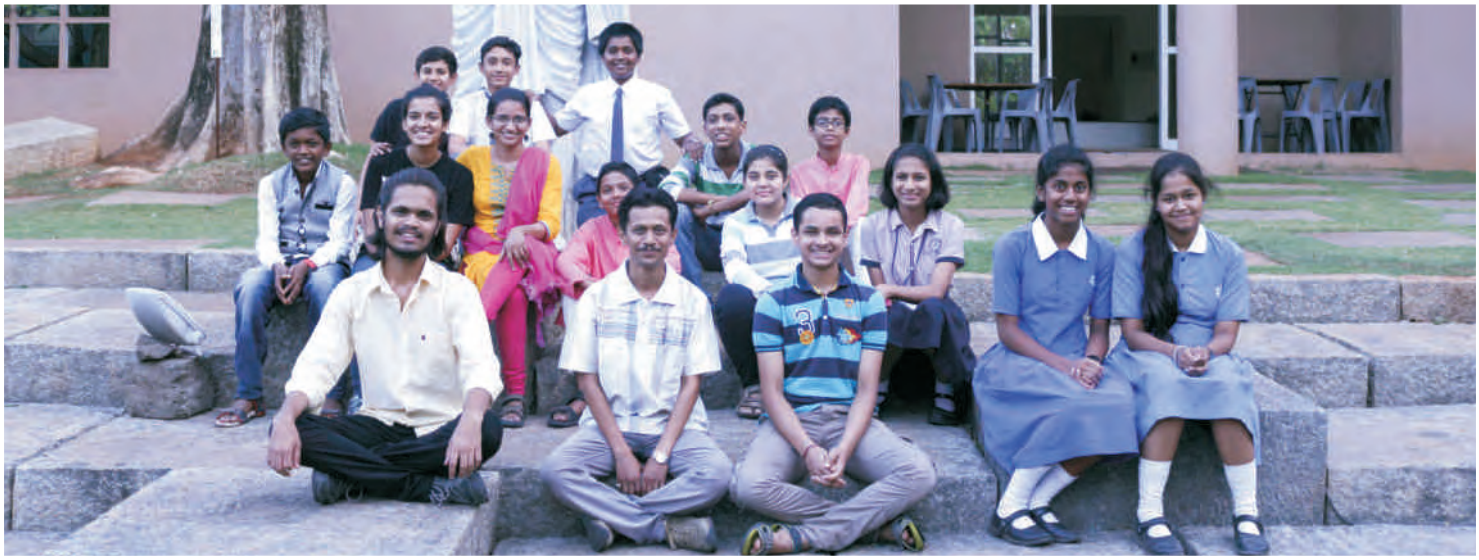
06.06.17

Ujjal Debnath on *Reconstructions of f(T) gravity from holographic and new Agegraphic dark energy models.*

06.06.17

Ram Kishor on *Lyapunov characteristic exponent.*

Summer School Students Programme and Astronomy Camp



The annual School Students' Summer Programme and Astronomy Camp was held during April 24 to May 26, 2017. One hundred and twenty two students of classes VIII, IX and X were invited from different schools of Pune city to Muktangan Vidnyan Shodhika at IUCAA. These students were grouped in five different batches, each batch started on Monday and continued till Friday each week. The aim was to instil the basics of astronomy and hands-on experiments to the students, so that they could opt for research in astronomy as their career. One of the key objectives was to make students to think scientifically, instead of following the textbooks or other resources blindly.

In the basic astronomy sessions, students learned interesting topics, like the scales of the Universe, the solar system, reading sky-maps, etc. Role-plays for the Earth-Moon system made students to understand the phases of the moon, and solar and lunar eclipses.

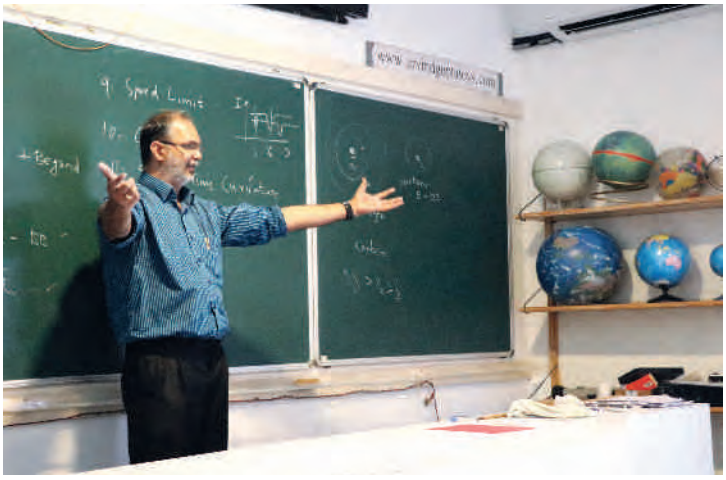
The demonstrations on optics made them experience and realize the behaviour of light when it interacts with different media. Working principle of different telescopes was one of the most enjoyed sessions.

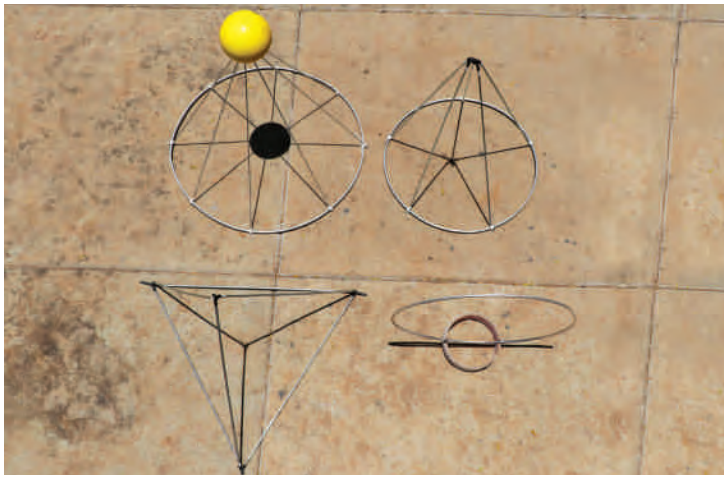
Hands-on astronomy included the making of an angle measurer, a CD spectroscope, a solar camera using pin-hole principle. There were three experiments designed to improve the experimental skills of students. These were (i) measuring the diameter of a mustard seed, (ii) finding the height of the Samrat Yantra at IUCAA using trigonometry, and (iii) determining the ratio of sun's distance from the earth to the diameter of the sun using a solar camera made by students.

Apart from the standard methods, the students were allowed to come up and use their ideas to solve a given problem. This encouraged the students to think about the different ways to carry out an experiment. For example, in the case of finding the diameter of mustard seeds, many students used volume-displacement principle. For determining the height of the Samrat Yantra, students used kinematical equation by measuring the time taken for a pebble dropped from top to reach the ground. In the third experiment, where an astronomical constant was to be calculated, the students came up with the ideas of projecting the image of the sun. Students also learned about the limitations of different methods, and error factors. On the last working day of every week, the students submitted reports of the experiments done by them.

At the end of each week, sky-watching sessions were organized for the participants and their parents. In these, the students used their sky-map reading knowledge gained during the week to locate the stars and constellations practically in the sky. On May 12, 2017, Zero Shadow Day for Pune was also celebrated.

Students were also given an opportunity to interact with IUCAA faculty members. Somak Raychaudhury, Durgesh Tripathi, Aseem Paranjape, Sanjit Mitra and A. N. Ramaprakash spent some of their valuable times to answer the questions of the students in a friendly manner.





Visitors

(April - June 2017)

Oluwashina Adegoke; Chaitanya Afle; Sanaa Agarwal; S. Aranya; Anil Nagorao Ardad; Kalyani Bagri; Amitava Bandyopadhyay; Bidisha Bandyopadhyay; Tanwi Bandyopadhyay; Srikumar Banerjee; Pranav Pramodrao Bardapurkar; Naseer Iqbal Bhat; Bidushi Bhattacharya; Parag Bhattacharya; Yashpal Bhulla; K.G. Biju; Rajib Biswas; Ritabrata Biswas; Mary Bosco; Koushik Chakraborty; Subenoy Chakraborty; Sumanta Chakraborty; Swadesh Chand; Ramesh Chandra; Gaayatri Chandrasekharan; Ritaban Chatterjee; Rwitika Chatterjee; Suchetana Chatterjee; Asis Kumar Chattopadhyay; Tanuka Chattopadhyay; Raghavendra Chaubey; Virander S. Chauhan; Mahathi Chavali; Sheetal Chopade; Rudrani Kar Chowdhury; Abhishek Das; Sudip Das; Sudipta Das; Abhirup Datta; Duggal Dayal; Ujjal Debnath; Karishma Dhanmeher; Payaswinee Dhoke; Bikash Dinda; Broja Gopal Dutta; Jayanta Dutta; Sandip Dutta; Savithri Ezhikode; Didier Fraix-Burnet; Samskruthi Ganjam; Sharad Gaonkar; Ritesh Ghosh; Shounak Ghosh; Tathagata Ghosh; Gourab Giri; Rupjyoti Gogoi; Pranjupriya Goswami; Shivappa B. Gudennavar; Labanya Kumar Guha; Sarbari Guha; Ajesh Gulati; Anshu Gupta; Pawan Kumar Gupta; Priya Hasan; Tanvir Hussain; K. Indulekha; Bhola Ishwar; Bala Iyer; Binu Padiyanickal Jacob; Joe Jacob; Andreas Jaeger; Dhairyashil Jagadale; Deepak Jain; Rishabh Jain; Abdul Jaleel; Marykutty James; K. Jeena; Sharda Keshav Jogadand; Reju Sam John; Sindu Jones; Reetika Joshi; Kanti Jotania; Anusree K.G.; Atish Kamble; Dinakar Kanjilal; Nisha Narasinha Kelkar; Ram Kishor; Akshay Pramod Kulkarni; Abhinav Kumar; Ajai Kumar; Pravir Kumar; Rajesh Kumar; B. Venkatta Kumaran; Badam Singh Kushvah; Ashu Kushwaha; Sathyanarayanan Kuzhikkatt; Tjonnie Guang Feng Li; Sreelakshmi M.; Mahith Madhanakumar; Tarun Maity; Anwesh Majumder; Shiva Kumar Malapaka; Jui Mallik; Soma Mandal; Titus Mathew; Meena; Irom Ablu Meitei; Bivudutta Mishra; Anupama Mohanan; Soumen Mondal; Surhud More; Ankan Mukherjee; Sagnick Mukherjee; Sajal Mukherjee; Chaitrali Shashikant Mulay; Pramod G. Musrif; Marcello Musso; Sujatha N.V.; Sachindra Naik; K. Rajagopalan Nair; K.C. Nair; Hemwati Nandan; Dibyendu Nandi; Swagata Nandi; Rathnasree Nandivada; Hasti Mohammadsadegh Nateghi; Nilam Navale; Arabinda Nayak; Rajaram Nityananda; Angel Priyana Noel; Madhavi Pachauri; Sreejith Padinhatteeri; Biswajit Pandey; Mahadev Pandge; P.N. Pandita; Ajith Parameswaran; Rutu M. Parekh; Abhishek Parida; K.D. Patil; Raagini Patki; B.C. Paul; Prasenjit Paul; Devraj Pawar; Bryan Penprase; Ninan Sajeeth Philip; Khun Sang Phukon; Jayadev Pradeep; Anirudh Pradhan; A.U. Preetha; Marina Prokopieva; Mizanur Rahaman; Aparna Raj; M. Xavier James Raj; Mainpal Rajan; Akshay Rana; Vivek Ashok Rane; Nisha Rani; Ajay Ratheesh; Pratik Ray; S.K. Ray; Saibal Ray; Mahendra Kumar Richharia; Subhojit Roy; Agniva Roychowdhury; Rajesh S.R; Anirban Saha; Tathagata Saha; Sunder B. Sahayanathan; Lekhram Sahu; Saumyadip Samui; Shishir Sankhyayan; Varun Saraswat; Sudipta Sarkar; Padmanabh Shrihari Sarpotdar; Sathyanarayanan; B.S. Sathyaprakash; Seema Satin; Peter Saulson; Anjan Ananda Sen; Asoke Kumar Sen; Somasri Sen; Zahir Ahmad Shah; Nigar Shaji; K.N. Shanti; Kaushal Sharma; Ramkishor Sharma; Dibyendu Shee; Hrishikesh Shetgaonkar; Anjani Kumar Shukla; Leo Singer; Aheibam Keshwarjit Singh; K.P. Singh; Manju Singh; Raghvendra Singh; Ajit Kumar Sinha; Aneesh Sivasankaran; Satish Sonkamble; Tamanapalli Sravan; Sindhu Sri Sravya; A.G. Sreejith; K. Sriram; Arun Srivastava; Kashika Srivastava; S. Sudhagar; Abhinav Sundar; Avinash Surendran; Lekshmi T.; Bivitha T. K.; Prakash Kumar Thakur; Rutwik Thengodkar; Rishikesh Dutta Tiwary; S.K. Tripathy; Santanu Tripathy; Vinutha Tummala; Anurag Tyagi; Anisul Ain Usmani; Prajwal V.P.; Hum Chand Varma; Mahendra Kumar Verma; Aditya Vidhate; Vinod; M. Vivek; Graham Walker; and Fauzan Zaid.

Visitors Expected

July 2017

Sanaa Agarwal, BITS-Pilani; Srikumar Banerjee, BARC, Mumbai; Chetan Bavdhankar, S.P. Pune University; Priya Bharali, Gauhati University; Debasish Borah, IIT, Guwahati; Mridusmita Buragohain, Tezpur University; Suresh Chandra, Amity University, Noida; Abhishek Das, NISER, Bhubaneshwar; Abhirup Datta, IIT, Indore; Kanan Kumar Datta, Presidency University, Kolkata; Savithri Ezhikode, St. Thomas College, Kozhencherry; Sunandan Gangopadhyay, IISER, Kolkata; Prachi Garella, Amity University, Noida; Akash Garg, Jamia Millia Islamia, New Delhi; Pranjupriya Goswami, Tezpur University; Umananda Goswami, Dibrugarh University; Anil Kumar Gourishetty, IIT, Roorkee; Anshu Gupta, Mumbai; Sitha K. Jagan, University of Calicut; Sandhya Jagannathan, Sharda Jogadand, Swami Ramanand Teerth Marathwada University, Nanded; Shivaraj Kandhasamy, LIGO, Livingston, USA; Abhisek Mohapatra, NIT, Bhubaneswar; Remya Nair, University of Kyoto; Sabyasachi Pal, Indian Centre for Space Physics, Kolkata; Rutu Parekh, Dhirubhai Ambani Institute of Information and Communication Technology, Gandhinagar; Raagini Patki, IISER, Pune; Pramod Pawar, Swami Ramanand Teerth Marathwada University, Nanded; Mainpal Rajan, Physical Research Laboratory, Ahmedabad; Amit Reza, IIT, Gandhinagar; Ashok Rupner, IISER, Pune; Gautam Saikia, Tezpur University; Prasant Samantray; Samyadip Sarkar, Jadavpur University, Kolkata; Rathin Sarma, Hojai College, Assam; Anjan Ananda Sen, Jamia Millia Islamia, New Delhi; Anand Sengupta, IIT, Gandhinagar; T.R. Seshadri, University of Delhi; Zahir Ahmad Shah, University of Kashmir, Srinagar; Aishawnnya Sharma, Tezpur University; Mohit Kumar Sharma, Amity University, Noida; Ramkishor Sharma, University of Delhi; Umesh Sharma, GLA University, Mathura; Hrishikesh Shetgaonkar, BITS, Pilani; Kalpana Shukla, GLA University, Mathura; Alka Singh, GLA University, Mathura; Avneet Singh, Max-Planck Institute for Gravitational Physics, Germany; G. P. Singh, Visvesvaraya National Institute of Technology, Nagpur; Prithvi Raj Singh, A.P.S. University, Rewa; S. Sunil, Institute for Plasma Research, Ahmedabad; Lekshmi T., Central University of Tamil Nadu, Thiruvarur; Amit Kumar Tamrakar, Pandit Ravishankar Shukla University, Raipur; Paniveni Udayashankar, NIE Institute of Technology, Mysore; Mahendra Kumar Verma, Pandit Ravishankar Shukla University, Raipur; and Naveen Yadav, IISc, Bengaluru.

August 2017

Bobomurat Ahmedov, Ulugh Beg Astronomical Institute, Tashkent; Juraev Bakhtinur, Uzbekistan National University, Uzbekistan; Debabrata Deb, City College, Kolkata; Safiqul Islam, Harish-Chandra Research Institute, Allahabad; Kanti Jotania, The M. S. University of Baroda, Vadodara; Abhijit Mandal, Bankura University; K. Rajagopalan Nair, CUSAT, Kochi; Anvar Shukurov, University of Newcastle, U.K.; and Bal Krishna Yadav, University of Lucknow.

September 2017

Abdul Aziz, IIEST, Shibpur; Sourav Roy Chowdhury, City College, Kolkata; Shyam Das, P. D. Women's College, Jalpaiguri; K. P. Harikrishnan, The Cochin College, Kochi; Pravir Kumar, IISER, Bhopal; Iftikar Sardar, Prabhu Jagatbandhu College, Howrah; Ranjan Sharma, P. D. Women's College, Jalpaiguri; and Murli Manohar Verma, Lucknow University.

Long Term Visitors

Rajesh Nayak, IISER, Kolkata; Pramod Pawar, Swami Ramanand Teerth Marathwada University, Nanded; and Prasant Samantray.

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