

A quarterly bulletin of the Inter-University Centre for Astronomy and Astrophysics

(An Autonomous Institution of the University Grants Commission)

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The National Science Day - 2014 was celebrated with great enthusiasm and efficiency by IUCAA members and visitors. The occasion saw a great response, and around eight thousand people were estimated to have been to IUCAA during the celebrations on three different days.

On February 15, IUCAA conducted a Science quiz along with Essay writing, Story writing and Drawing competitions for the rural students of the Ambegaon Taluka, organised by the Public Outreach personnel. Bhooshan Gadre and Vikram Khaire, both research scholars of IUCAA and Nilesh Pokharkar, IUCAA Girawali Observatory staff helped a lot in arranging the programmes. The participation has been increasing

NATIONAL SCIENCE DAY CELEBRATIONS - 2014

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every year, twenty five rural schools competed at the venue generously provided by the New English School, Landewadi.

On February 22, about 500 students from 83 schools in Pune city responded to IUCAA's invitation and participated in another set of interschool competitions held at IUCAA, Pune campus. Students from classes VIII to X took part in the Drawing, Essay, Poetry and Science quiz competitions. Sukanta Bose gave an interactive talk to the teachers while the students were partcipating in the competitions. After the finals of the quiz, all winning students received their prizes from the Director, Ajit Kembhavi. The overall best school performance trophy went to the New English School, Landewadi, which won 3 prizes in all.

The IUCAA, Pune campus was opened to the general public on the National





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Science Day, February 28. Various programmes were arranged with voluntary contributions from IUCAA staff and family. The visitors were welcomed and guided through the various displays while they discovered the wonders of the Universe.

Continuous demonstrations of the World Wide Telescope software were conducted in the Bhaskara 1 lecture hall by IUCAA students and the Virtual Observatory (VO) team. The members of the Radio Physics Laboratory illustrated the scientific concepts on Radio Astronomy at the fover outside Bhaskara 2. Hundreds of people enjoyed a few films on Astronomical topics, coordinated by Santanu Das. Spectacular posters, introducing general Astronomy and the related work done at IUCAA, were put up by the research scholars and postdoctoral fellows. These drew a big crowd. A series of five public talks were given by Pallavi Bhat, Gulab Dewangan, Ashish Mahabal, Nidhi Pant and Varun Bhalerao in Bhaskara 3. of which two were in Marathi, one in Hindi and others in English.

Details of the large projects that IUCAA is involved in were showcased in a poster display in the Chandrasekhar Auditorium foyer. The science toys group did a wonderful job at explaining various science experiments developed at the IUCAA Muktangan Vidnyan Shodhika (MVS) to large crowds gathered inside the auditorium. Later, in a live interaction,



Jayant Narlikar and Ajit Kembhavi answered various Astronomy related questions from the public. This session was coordinated by Samir Dhurde. The day also included a public talk by Avinash Khare, IISER-Pune, based on the Nobel Prize in Physics 2013. All the live sessions in the auditorium were webcast for those who could not attend in person.

The many science models located in the Science Park were renovated by Maharudra Mate and explained by groups led by IUCAA outreach interns, Chetan Bavdhankar, Rethika Deshmukh and Ziad Modak. Forty college students volunteered and were trained to showcase the scientific contributions of the four great scientists, whose statues are part of the IUCAA Kund, and to explain the principles behind the Foucault pendulum, etc. Kadambari Bhujbal from IUCAA also actively participated in the exhibition in the new Solar System landscape. Some NGOs put up stalls to introduce people to various science books and educational resources.

Amateur Astronomers' groups also catered a lot to the public's curiosity with a special exhibit on AstroSat, put up by a group of enthusiastic volunteers from Jyotirvidya Parisanstha, who explained its working and IUCAA's role in it. A telescope information and safe solar viewers booths were put up by the Akashmitra group. The two groups also helped successfully to conduct the evening sky-show, which was attended by over 1100 people. This event ended at 11:00 p.m., wrapping up the celebrations.



Winners of Competitions, held at New English School, Landewadi.

Science Quiz :

- **1st prize :** Akanksha Ramesh Hande, Siddhesh Mangesh Wagh, and Aditya Pravin Pokharkar, from New English School, Landewadi.
- **2nd prize :** Digvijay Suresh Jarkad, Monika Machhindranath Hinge, and Prachi Nilesh Sanas, from Vidya Vikas Mandir, Awasari Budruk.
- **2nd prize :** Nusrat Kasambhai Tamboli, Jyoti Manjunath Nayak, and Suwarna Manohar Gunjal, from Shri Wakeshwar Vidyalaya, Peth.

(There was a tie for the second prize, and hence no third prize was given)

Essay Writing (Marathi): 1st prize : Shreyas Suryakant Joshi, from Vidya Vikas Mandir, Awasari Budruk 2nd prize : Sai Shashikant Thorat, from New English School, Landewadi. Drawing : 1st prize : Harshali Dattatraya Kale, from Shri Wakeshwar Vidyalaya, Peth. 2nd prize : Tanvi Ram Aher, from New English School, Landewadi. **Story Writing :** Pranali Vinod Jambhale, 1st prize : from Hirkani Vidyalaya, Gawadewadi.

Best school performance Trophy : New English School, Landewadi



Winners of Competitions, held at IUCAA campus, Pune

Science Quiz:		
1st prize :	Aaditya Yogesh Yawalkar, Sharat Paramanand Bhat, and Apurv Shrikant Deshpande, from Dr. Kalmadi Shyamrao High School.	
2nd prize :	Riya Rajesh Deshpande, Shravan Devendra Godse, and Aditya Prashant Khatavkar, from Muktangan English School and Jr. College.	
3rd prize :	Manavi Garg, Akanksha Sahoo, and Ishani Santurkar, from St. Mary's School.	
Essay Writing (Marathi):		

1st prize : Purva Santosh Deshpande, from H. H. C. P. High School for Girls. (No essay for the second prize was eligible.)

Essay Writing (English):

1st prize :	Shravani Milind Chavan,
	from Jnana Prabodhini
	Navanagar Vidyalaya.

2nd prize : Ashwin Umesh Hendre, from Dr. Kalmadi Shyamrao High School, and Khyati Mohabey, from Sevasadan English Medium School (Shared)

Drawing :

- Gauri Vikas Tawade, from 1st prize : Abhinav Vidyalaya High School.
- 2nd prize : Sanjay Manoranjan Paramanik, from Vidya Pratishthan's English Medium School.
- 3rd prize : Mohini Vikas Bhosekar, from Abhinav Vidyalaya English Medium High School.

Poetry (English) :

- 1st prize : Poorva Parag Bhalerao, from Abhinav Vidyalaya English Medium High School.
- 2nd prize : Rujula Upadhye, from Sevasadan English Medium School.
- 3rd prize : Shweta Anand Kulkarni, from Jnana Prabodhini Navanagar Vidyalaya (E).

Poetry (Marathi):

- 1st prize : Shruti Suhas Varode, from Ahilyadevi High School for Girls.
- 2nd prize : Mayuri Manish Kirve, from Abhinav Vidyalaya High School.
- 3rd prize : Sonika Anil Baravkar, from Vidyapeeth High School.









Drawing 1st prize (Harshali Dattatraya Kale) Theme: World in the year 2200



Drawing 2nd prize (Tanvi Ram Aher) Theme: World in the year 2200



Drawing 1st prize (Gauri Vikas Tawade) Theme: A Comet visits us



Drawing 2nd prize (Sanjay Manoranjan Paramanik) Theme: Mission to Mars



Workshop on Python Programming in Astronomy



The first ever workshop on "Python Programming in Astronomy" was held in IUCAA during February 17 - 21, 2014. Thirty participants from institutes and universities across the country and 22 participants from IUCAA and NCRA attended this workshop.

Python is a programming language, which emerged more than two decades ago as a single man's hobby, and today it is at the heart of many sub-areas of research, not only in physics but also in areas such as biology, finance, medicine, etc. In astronomy, in particular, it has emerged as a preferred language for data analysis and also for construction of data reduction pipelines in major observational facilities. Thus, a strong need was felt for organizing a workshop that could introduce the astronomers in the country to this language and boost its usage. Using



external modules, especially designed for astronomers, Python can be used for performing daily tasks in the field of observational astronomy, with ease.

On the first day, the participants were introduced to the basics of Python and were exposed to problem solving. The second day tied some loose ends, and immediately introduced concept of data table management and visualization. The third day focussed on applications of Python for numerical computation and advanced data visualization. Advanced topics



followed on the day 4 and on the last day, it was wrapping of legacy code into Python and focussed on empowering the participants with the resources necessary for staying updated with the latest in the world of Python.

Each day, in the morning, there were theory sessions, and rigorous hands-on sessions in the afternoon. Participants were also asked to undertake a mini project and make presentations on the fifth day. The team of instructors were Ashish Mahabal, Yogesh Wadadekar, Sajeeth Philip, Varun Bhalerao, Kaustubh Vaghmare and Joe Philip, and were involved in giving constant feedback on improving the coding skills of the participants. A special talk was also given by Ashish Mahabal focussing on important practices in coding. The general feedback from the participants indicated that the content was useful for all and greatly helped in their adoption of the platform.

Kaustubh Vaghmare coordinated this workshop.



Congratulations to...

Arvind Gupta on receiving IBN Lokmat Prerna Puraskar (Science and Technology) by IBN Lokmat, 2014.

Girjesh R. Gupta on being conferred with Justice Oak Best Thesis Award - 2011 by the Astronomical Society of India.

Jayant Narlikar on receiving Dr. Yelavarthy Nayudamma Memorial Award – 2013 by Dr. Y. Nayudamma Memorial Trust, Tenali, Andhra Pradesh.

Hamsa Padmanabhan on being awarded Shri Purushottam Narayan Bhogate Gold Medal, Late Professor Waman Madhav Dabadghav Gold Medal, Late Principal Ranglar Gopalkrishna Laxman-Chandratraya Gold Medal for standing first at M.Sc. (Physics) Credit System Examinations April / May 2012 of the University of Pune.

IUCAA-IUSSTF Workshop on Variability of Astronomical Sources



A three day workshop on the Variability of Astronomical Sources was conducted at St. Thomas College, Kozhencherry, during January 22 - 24, 2014. Thirty five students, who were either in the final year of PG or in the initial years of their PhD in astronomy, participated in the workshop. The objective of the workshop was to generate interest and human resource in time domain astronomy among the young astronomers. The inaugural lecture by V.C.Kuriakose, (Coordinator, IRC, Kochi) gave an overview of astronomy, stressing the importance of variable sources and the need for the skills in analysis of associated data. The first half of the workshop intended to brush up the basics was handled by the local resource persons V. C. Kuriakose, K. Indulekha (M.G. University, Kottayam), N. Shaji (Maharajas College, Ernakulam). Joe Jacob (Newman College, Thodupuzha), Sheelu Abraham (St. Thomas College, Kozhencherry), Savithri Ezhikode (St. Thomas College, Kozhencherri), Arun Kumar (St. Thomas College, Kozhencherry). Joe Philip Ninan (TIFR, Mumbai) dealt with descriptions about astronomy, in general, and optical, x-ray, radio sources and the data, in particular, with a stress on photometric and spectroscopic techniques, and explained the basics of astronomy, which served to prepare the audience for the advanced topics. The later half was handled by experts from the IUSSTF (The Indo-US Science and Technology Forum) joint meetings that were going on in parallel sessions at the same place. Ranjan Gupta

(IUCAA), H. P. Singh (Delhi University), Shashi M. Kanbur (Department of Physics and Earth Sciences, SUNY OSWEGO, USA), Ashish Mahabal (Caltech), Matthew J. Graham (Caltech), Bruce Bassett (African Institute for Mathematical Sciences, South African Astronomical Observatory and University of Cape Town), Sukanta Deb (Acharya Narendra Dev College, New Delhi), Rachel Wagner-Kaiser (University of Florida, USA), Ryan James Oelker (Texas A & M, USA) and Earl Bellinger (University of Florida, USA) introduced advanced topics, in which variable optical sources, their role in modern astronomy, techniques of data acquisition, the role of small telescopes in following the transients, web resources which provide variable source data and the importance of automated schemes and machine learning in handling variable data were explained to the students. The evenings were devoted to hands-on-sessions, handled by local and Delhi University resource persons, that gave students first hand information on the skills of retrieval and use of variable source data and the software tools to analyse data. The feedback from the participating students indicated that the workshop which dealt with the basics and the data handling skills in the emerging field of variable sources in astronomy gave them novel ideas to work with.

Ajit Kembhavi, Ranjan Gupta and Rajiv Sharma also spoke during the workshop. H.P. Singh, Ashish Mahabal, and Sajith Phillip were the Coordinators of this workshop.

MIT-IUCAA Workshop on X-ray Studies of Transient Astronomical Sources

An MIT-IUCAA workshop on "X-ray Studies of Transient Astronomical Sources" was held at IUCAA during January 13 - 24, 2014. This was a collaborative effort of the Massachusetts Institute of Technology, USA and IUCAA, aided by MIT Global Seed Fund MISTI. A team of six experts from MIT, namely Deepto Chakrabarty, Michael Nowak, Herman Marshall, Ronald Remillard, Jeroen Homan and Dimitrios Psaltis, delivered lectures and provided handson training to about 25 participants including Ph.D. students, post-doctoral fellows and young staff members working in the field of X-ray Astronomy at universities and research institutions in India. On January 17, a special session on "Transients with AstroSat" brought together more than 15 senior astronomers from all over India to interact with the workshop participants.

A large majority of X-ray sources in the sky are transient or are highly variable in nature. Much of our current understanding of compact stars and







black holes derives from the study of such transient sources. This workshop focussed on the scientific importance of X-ray transients and variable sources, the optimal observing strategies and methods of data analysis and interpretation. The morning hours over these two weeks were devoted to lectures covering these topics by the visiting MIT experts. The afternoons were devoted to hands-on sessions, in which the participants were required to classify and characterize different X-ray sources and derive the unique properties of different classes of sources, by analysing the vast amounts of data available in the archives of ongoing and past X-ray satellite missions. Specific training sessions were organised to familiarise the participants with the techniques of analysing high resolution spectroscopic data from the Chandra X-ray Observatory and conducting simultaneous timing and spectroscopic analysis of data acquired by the Rossi X-ray Timing Explorer satellite.

One of the important exercises undertaken at the workshop was to identify possible ways to predict the transient activity of a given X-ray source based on data available from Xray sky monitors. It was found that for certain source classes it was indeed



possible to fairly reliably predict the transient activity if continuous multiband X-ray monitoring data was available. This would greatly help in planning observations of such sources with the upcoming Indian AstroSat mission. An analysis was carried out to plan how the data from the X-ray sky monitor aboard AstroSat may be used to quickly classify any new transient source. In the special session on January 17, coordinated observations with AstroSat and other observatories was also discussed. The importance of coordinated observations for crosscalibration of AstroSat instruments was emphasised, and the role of the international consortium IACHEC in arranging such observations was elaborated.

The final exercise for the workshop participants was to write mock Target of Opportunity proposals for observations of a few simulated transient sources with the AstroSat mission. The instructors evaluated and ranked these proposals based on their technical and scientific merit, as well as clarity of presentation. Participants received valuable feedback on the proposals they generated, which would enable them to write strong observing proposals in the future. The workshop was coordinated by Dipankar Bhattacharya.

Introductory Workshop in Astronomy and Astrophysics



This workshop was held at Manipur University during February 10-12, 2014 under the aegis of IUCAA, with partial financial support from the UGC's Special Assistance Fund of the Department of Physics of the University. The purpose of the workshop was to expose and motivate post-graduate students with Physics background, young researchers and College/University teachers towards Astronomy and Astrophysics. The workshop focused on observational astronomy using small telescopes and recent advances in research in the field.

The workshop was inaugurated by H. Nandakumar Sarma, Vice-Chancellor, Manipur University, and as its Chief Guest, at the Court Hall of the University. Other dignitaries on the dais were Ranjan Gupta (Chairman, IUCAA Scientific Meetings Committee), M. Dhaneshwar Singh, (Dean, School of Mathematical and Physical Sciences, MU) and K. Yugindro Singh, the Convener of the workshop. A total of 37 participants from different parts of the country participated in the workshop.

Seven resource persons delivered series of lectures related to research in observational astronomy. Ranjan Gupta spoke on the topics "Astronomical Spectroscopy" and "Careers in Astronomy". Tanuka Chattopadhvav of Calcutta University spoke on "Galaxies"; H. P. Singh of Delhi University on "Stars and Their Evolution" and "Observing Facilities at Delhi University"; Asoke Kumar Sen of Assam University on "Telescopes, Detectors and Photometry" and "Astronomical Polarimetry"; A. Senorita Devi of Assam University on "X-ray Astronomy"; K. Yugindro Singh of Manipur University on "Observations with Small Telescopes" and "Measuring the Properties of Stars" and I. Ablu Meitei of Pettigrew





College, Ukhrul on "Active Galactic Nuclei (AGNs)".

On the nights of February 10 - 11, 2014, the participants were given hands-on training on observational astronomy including photometric measurements using telescopes and photometer, with I. Ablu Meitei as the instructor, in the presence of Ranjan Gupta, H. P. Singh, A. K. Sen, T. Chattopadhyay and K. Y. Singh.

The proceedings of the workshop were covered by print and electronic media. Ranjan Gupta and K. Yugindro Singh were the coordinators.



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Indo-US Joint Centres Meeting

A meeting of the two joint Indo-US centres (a) ClassACT of IUCAA, Caltech and St. Thomas College (b) Variable Stars of University of Delhi, SUNY Oswego, University of Florida, Gainesville, Texas A&M University and IUCAA was held at St. Thomas College, Kozhencherry during January 20 - 24, 2014. The main objective of the meeting was to identify areas of mutual interest in which larger collaborations were beneficial. Besides the IUSSTF joint centre members, Rajiv Sharma, the Executive Director of IUSSTF and Aiit Kembhavi, the Director of IUCAA also participated in the discussions. A special meeting was held to introduce IUSSTF and various research funding facilities available to a general audience.



Workshop on Radio Studies of Galaxies and Galaxy Systems



A prominent component of India's contribution to radio astronomy has been directed to the radio studies of galaxies and systems of galaxies. Recently, it was felt that such activity has begun to spread out to several institutes and universities across the country. Whereas the country now has a formidable expertise in this area, on the whole, the activity at each place is highly sub-critical, confined to no more than a few researchers, at best.

It is, therefore, crucial to pool together the varied expertise thinly spread across the country and intensify collaborative research, thereby enhancing India's overall impact in this field on a sustained basis. To foster these goals, a 3-day workshop on "Radio Studies of Galaxies and Galaxy Systems" was organized at IUCAA during March 4 - 6, 2014, with the objective of bringing together the country's researchers who are active in this area, and thus, pool their varied expertise to promote collaborative projects involving both established and young researchers. About 25 invited review talks were presented on various topics related to AGNs. Sufficient time was spent on discussions and plans for future collaborations.

The workshop was attended by about 50 participants from different research institutes and universities in India. R. Srianand and Gopal Krishna coordinated this workshop.

Workshop on Astronomy of Transients with Small Telescopes



A workshop aimed at providing an impetus to the universities and colleges (amongst IUCAA associates and others) that own "small telescopes" (~10 - 16 inch aperture) with good accessories, was organised at IUCAA during January 31 -February 2, 2014. There were participants from 20 institutions along with some active amateur astronomers. The programme included familiarising the participants with the use of small aperture telescopes and their potential in contributing to very good astronomy. Special discussion sessions were aimed at clearing issues faced in the use of observing and control hardware. Two evening hands-on training sessions on automation and use of small telescopes were conducted with the help of Ranjan Gupta, Kaustubh Vaghmare and



Deepak Joshi (JVP). Ashish Mahabal and Varun Bhalerao provided very systematic training in data collection and use of analysis tools. Several IUCAA academics gave talks about the science that can be done with these and special focus was given to a follow-up of transient events. There were also talks on existing small telescope facilities and the observations performed with these telescopes at various locations in the country. Good projects, that can be done with students and staff in the respective institutions, were suggested and groups were formed that would be able to carry out coordinated activities.

More details and follow up material are available at :

http://www.iucaa.ernet.in/~scipop/at wst.

The workshop was co-ordinated by Gulab Dewangan and Samir Dhurde.



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Seminars			
03.01.2014	Tuhin Ghosh on Planck's View on the Galactic Interstellar Medium		
07.01.2014	Dhrubaditya Mitra on Can Planetesimals Form By Collisional Fusion?		
09.01.2014	Camille Couturier on Astrophysical Tests of Quantum Gravity Models		
27.01.2014	Sharanya Sur on Turbulent Mixing in Magnetized Media		
06.02.2014	Girjesh R. Gupta on Waves in the Solar Atmosphere		
07.02.2014	Nidhi Pant on Characterizing Statistical Isotropy Violation Effects in CMB Maps		
18.02.2014	Giorgi Melikidze on The Model for Radio Pulsar Activity (Part –I)		
20.02.2014	Gary J. Ferland on Powering the Filaments in Cool-Core Clusters of Galaxies		
21.02.2014	Petri Vaisanen on Investigating the Histories of Luminous IR Galaxies with Large Telescopes		
24.02.2014	Giorgi Melikidze on The Model for Radio Pulsar Activity (Part –II)		
25.02.2014	Eric M.Wilcots on The Effect of Environment on Galaxy Transformation in Groups		
07.03.2014	Jonathan Freundlich on Star Formation Efficiency at High Redshift and On Sub-Galactic Scales		
07.03.2014	Pavan Kumar Aluri on Cosmological Principle and Large Angle Anomalies of Cosmic Microwave Background		
18.03.2014	Steven Kahn on The Large Synoptic Survey Telescope		
18.03.2014	Anil K. Pradhan on Do We Understand What the Sun is Made of: Opacities and Abundances?		

Colloquium

10.01.2014

Bruce Bassett on Machine Learning and Artificial Intelligence in Astronomy

IUCAA Preprints

IUCAA preprints released during January -March 2014 can be obtained from the IUCAA library (library@iucaa.ernet.in). The preprints can also be freely downloaded from http://www.iucaa.ernet.in/~library/main.html.

... Farewell to

Angel Ruiz, who completed his tenure at IUCAA and has taken a Post-doctoral Fellowship at the Instituto de Física de Cantabria (IFCA), in Santander, Spain (Institute of Physics of Cantabria).

VISITORS (January - March 2014)

Sheelu Abraham, Gazi Ameen Ahmed, Mohd. Shah Alam, Shah Alam, Susmitha Rani Antony, G.C.Anupama, Shivam Arora, U.Ashwini, Dipankar Banerjee, S.K.Banerjee, Sudhanshu Barway, Bruce Bassett, Earl P. Bellinger, Aru Beri, Anupam Bhardwaj, Naseer Iqbal Bhat, Anindita Bhattacharjee, Debbijoy Bhattacharya, Gour Bhattacharya, Samarpita Bhattacharya, Sudip Bhattacharyya, K.G.Biju, Ritabrata Biswas, Dhiraj Bora, Biswajit Bose, Francisco Cabral, Deepto Chakrabarty, Koushik Chakraborty, Subenoy Chakraborty, Hem Chandra, Sunil Chandra, Ritaban Chatterjee, Saikat Chatterjee, Goutami Chattopadhyay, Indranil Chattopadhyay, Surajit Chattopadhyay, Tanuka Chattopadhyay, Purnima Chaturvedi, Raghavendra Chaubey, Laxmikant Chaware, Rabin Chhetri, Manojendu Choudhury, Haeun Chung, Camilie Couturier, Ajaz Ahmad Dar, Mousumi Das, Suranjan Das, Bipash Dasgupta, A.D.Dashrath, Ujjal Debnath, Atri Deshamukhya, Aniruddha Deshpande, Dhanya J. S., J. G.. Doyle, Broja Gopal Dutta, Sourav Dutta, Laurent Eyer, Savithri Ezhikode, Gary Ferland, Jonathan Freundlich, Poshak Gandhi, Apratim Ganguly, Sharad Gaonkar, Prerak Garg, Fred Gent, Michelle George, Rahul Ghosh, Sushant Ghosh, Tuhin Ghosh, Janusz Gil, Rupjyoti Gogoi, Sarbari Guha, Anuradha Gupta, P.K.Gupta, Mubashir Hamid, Annapurna Hazra, Jerden Homan, Wali Hossain, Sk.. Monowar Hossein, Ananda Hota, Asif Iqbal, Bhola Ishwar, Nazma Islam, Bala Iyer, Nirmal Iyer, Joe Jacob, Rinku Jacob, Gaurava Jaiswal, Rameshwar Kumar Jhingan, Jithesh V. Reju Sam John, Deepak Joshee, Jagdish Chandra Joshi, Ravi Joshi, Sathyanarayanan K., Steven Kahn, Anil Kakodkar, Md. Mehedi Kalam, Ruta Kale, Nandita Kalita, Sanjeev Kalita,



Shalmalee Lalit Kapse, Shilpa Kastha, Abha Khakurdikar, Rizwan Shahid Khan, Videsh Khandeparkar, Preeti Kharb, Pravin Kokne, Singirala Shiva Rama Krishna, Ajai Kumar, Arun Kumar, Saurabh Kumar, Alisha Kundert, Raj Kunkolienkar, M.L. Kurtadikar, Pankaj Kushwaha, Sharmad Kuvelkar, Ivan Dorjee Lipcha, Honey M. Maria Sotirova Madjarska, Ashish Mahabal, Nilanjana Mahata, Kaushik Maiti, Chandreyee Maitra, Manzoor A. Malik, Soma Mandal, Arun Mangalam, Surinder Manhas, Bappaditya Manna, Jameer Manur, Bari Maqbool, Herman L. Marshall, Tabasum Masood, Nairwita Mazumder, George Melikidze, Vivek Kumar Mishra, Dhrubaditya Mitra, Saugata Mitra, Aditya Sow Mondal, Sargam Mulay, Pramod G Musrif, Sachindra Naik, Brenda Namumba, K. S. V. S. Narasimhan, Danielle Nielsen, Joe Philip Ninan, Micheal A. Nowak, Ryan J. Oelkers, Alain Omont, Vaidehi Sharan Paliya, Supriya Pan, S. K. Pandey, P. N. Pandita, Arvind Paranjpye, M. K. Patil, B. C. Paul, Biswajit Paul, Sailendra Nath, .Devraj Pawar, Pramod Pawar, Kalvani Pedamkar, Ninan Sajeeth Philip, Khun Sang Phukon, Nihan Pol, T. P. Prabhu, Anirudh Pradhan, Pragati Pradhan, Dimitrios Psaltis, B. Purniah, Kedar D. Purohit, Tushar Purohit, Mussadiq Oureshi, .Sendhil Raja, Gayathri Raman, Pritesh Ranadive, Chavan Raniit, Sujata Kundu, A. R. Rao, Rakesh Rao, Keyuri Raodeo, Shantanu Rastogi, C. D. Ravikumar, B. T. Ravishankar, Saibal Ray, Subharthi Ray, Somak Raychaudhury, Alexandre Refrigier, Ronald Remillard, Nelson Rodrigues, Javashree Roy, Prabir Rudra, Sonali Sachdeva, Anirban Saha, Subhajit Saha, Sanjay Kumar Sahay, Sunder B. Sahayanathan, Sheetal Kumar Sahu, Prasant Kumar Samantray, Saumyadip Samui, Shishir Sankhyayan, Tamal Sarkar, S. Seetha, Sarang Shah, K. Y. Shaju, Shalima P, M. Udaya Shankar, Ashu Sharma, Neha Sharma, Anvar Shukurov, Ashok Singal, Amarjeet Singh, H. P. Singh, K. Yugindro Singh, K. P. Singh, Atreyee Sinha, Jozef Skakala, Satish Sonkamble, P. Sreekumar, Radha Srinivasan, B. V. Srirama, C. S. Stalin, S. Sudhakar, B. Sundar, Sharanya Sur, Atul Surana, Avinash Surendran, Firoza Sutaria, Prathamesh D. Tamhane, Pooja Tolia, Pranjal Trivedi, C. S. Unnikrishnan, Santosh Vadawale, Petri Vaisanen, Anjali Varghese, Rachel Wagner-Kaiser, Naveel Wani, John T.Whelan, Eric Wilcots, J. S. Yadav, 31 students from Presidency University, Kolkata; and 5 Students from Mumbai University.

S. Jocelyn Bell Burnell (Visiting Professor at the Oxford University), the discoverer of the first radio Pulsar, visited the IUCAA MVS Exploratorium on January 6, 2014.



VISITORS EXPECTED

April 2014 :

Kassaye Ermias Abek, South Africa; Ujjal Debnath, Bengal Engg. and Sci. University, Howrah; L. N. Katkar, Shivaji University, Kolhapur; Nagendra Kumar, M.M.H. College, Ghaziabad; Soma Mandal, Taki Govt.College, West Bengal; Nilmani Mathur, TIFR, Mumbai; Pramod Musrif, AIISM's Instt. of Information Technology, Pune; Biplab Raychaudhuri, Santiniketan, West Bengal; Gargi Shaw, CBS, Mumbai; Sushant Pawar, University of Mumbai, Mumbai; Rajesh S.R. S. D. College, Kerala; Sunita Rewale, University of Mumbai, Mumbai; Radha Srinivasan, University of Mumbai, Mumbai; D. B. Vaidya, Ex-Gujarat College, Ahmedabad

May 2014 :

Subenoy Chakraborty, Jadavpur University, Kolkata; Sushant Ghosh, Jamia Millia Islamia, Delhi; K. P. Harikrishnan, The Cochin College, Kochi; K. Indulekha, Mahatma Gandhi Univ., Kottayam, Kerala; Joe Jacob, Newman College, Kerala; Kanti Jotania, M.S. University of Baroda,Vadodara; Minu Joy, Alphonsa College, Kerala; Soma Mandal, Taki Govt. College, West Bengal; Anirudh Pradhan, Hindu Post Graduate College, Ghazipur; Saibal Ray, Govt. College of Engg. & Ceramic Tech., Kolkata; and S. K. Sahay, BITS, Pilani, Goa.

June 2014:

Jasjeet S. Bagla, IISER, Mohali; Sandip Bhattacharya, B. M. Birla Planetarium, Jaipur; Harvinder Jassal, IISER, Mohali; C.S. Khodre, Suresh Deshmukh College of Engineering, Selukate, Wardha; Arpan Kundu, Presidency University, Kolkata; Shalima P., IIA, Bangalore; and Umang Sharma, Guru Gobind Singh Indraprastha University, New Delhi

Long Term Visitors:

P. C. Agrawal; Sanjeev Dhurandhar; Pushpa Khare; and Gopal Krishna

Workshop on Fabrication of Night Sky Photometer for Small Telescopes

Many universities/colleges now have small telescopes (of various sizes, ranging from 8" to 14" diameter), and have interest in monitoring variable stars with the low cost night sky photometers made in IUCAA. Such photometers have been fabricated in IUCAA over the past several years and been used by many university/college groups. There is a constant demand for more of such units. To cater this, a workshop on Fabrication of Night Sky Photometer for Small Telescopes will be organized at IUCAA Science Centre during September 8 - 12, 2014. In this workshop, a few new photometers will be

fabricated, and also the existing ones can be calibrated, etc.

There is also a plan to provide additional flip-mirror unit, and a data-logger to the users.

Persons who already have a night sky photometer from such workshops conducted earlier at IUCAA, as well as persons who have operating small telescopes (up to 14" diameter) are welcome to apply to aocp@iucaa.ernet.in. The last date to receive applications is July 31, 2014, and the selected participants will be informed in early August 2014.

5 Know Thy Birds

— Chaitanya Rajarshi

Blue Rock Pigeon (Columba livia)

Hello friends,

Which is the most commonly seen bird now days in your locality? Many of you will answer it to be Pigeon. So, do you like their presence in your premises? ...No...? Why? Ohh, you must be thinking of the nuisance caused by these pigeons...true. Let's enter the Pigeon's world and know them better.

These least concerned birds are commonly seen in cities around the world, nest on buildings, windows, natural cliffs and feed on grains, bird seeds and discarded food.

The size is about 28 - 40 cm long and weight of about 250 - 500 gm. It has a blue-gray head, neck, and chest with glossy green, reddish-purple iridescence along its neck and wing feathers. The eyes are red-orange with a paler inner ring. The bill is greyblack with an eye-catching off-white mark, and the feet are purplish-red. The female is identical to the male, except the iridescence on the neck is less intense. The wings pattern includes two bars and the tail is dark tipped.

They breed throughout the year. The



Two Eggs laid



One day old nestlings



nest is like a platform made of straws,

and tree sticks. Normally, they lay two white eggs and both male-female

incubate for about 3 weeks. For the

first few days, the nestlings feed on

crop-milk, which is produced in the

Pigeons are messenger birds, well

known for their ability to find their

way home from long distances. They

use the position of the Sun, Earth's

magnetic field, and landmarks for

navigation. This ability of pigeons is

used by humans since ancient times.

In both World Wars, their messages

Unlike many birds, Pigeons don't carry

away the faeces of their nestlings.

Their nests also incorporate unhatched

eggs and dead nestlings. The

droppings contain dangerous fungi and bacteria that are potentially

harmful to humans. The highly

corrosive uric acid in it can cause

damage to buildings and monuments.

saved thousands of human lives.

crops of both parents.

Welcome to this world



One month old

(Photos: Chaitanya Rajarshi)



Blue Rock Pigeon (Photo Courtesy: Umesh Vaghela)

problem today, but couple of centuries back it was highly prized fertilizer and even guards were stationed to stop thieves stealing it. Also, it was used in making gunpowder. Pigeons are considered to be intelligent birds and have also been found to pass the 'mirror test'.

But, today the nuisance has roused to the level that people are taking help of professionals to get rid of Pigeons.

Despite of the nuisance, many people love feeding this Bird of Peace and own pigeon club for the racing (money making).

After reading this article, some of you would like to say *Kabootar Aaa Aaa...* and some would sing *Kabootar Jaa Jaa...*

