

KHAGOL

No. 112
OCTOBER 2017



IUCAA
ISSN 0972-7647

A quarterly bulletin of the
Inter-University Centre for Astronomy and Astrophysics
(An autonomous institution of the University Grants Commission)

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Available online at <http://publication.iucaa.in/index.php/khagol>

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Shodh Shiksha Sameeksha

**Impact of the Inter-University Centres of the UGC on
Research and Teaching at Indian Universities
and Higher Educational Institutions**

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शिक्षा
समीक्षा



SHODH
SHIKSHA
SAMEEKSHA



Jagdish Arora, Somak Raychaudhury, Prakash Javadekar, Virander Chauhan, Dinakar Kanjilal and Ajit Sinha

An event initiated by the MHRD/UGC, named, "Shodh Shiksha Sameeksha", was arranged on Sunday, October 1, 2017, at the Chandrasekhar Auditorium, IUCAA, Pune, to explore the impact of the Inter-University Centres (IUCs) of the UGC on Research and Teaching at Indian Universities and Higher Educational Institutions.

The IUCs involved were:

The Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune; The Inter-University Accelerator Centre (IUAC), New Delhi; The UGC-DAE Consortium for Scientific Research (UGC-DAE CSR), Indore; and The Information and Library Network (INFLIBNET) Centre, Gandhinagar.

The event was graced by the presence of Prakash Javadekar, Hon'ble Minister of HRD, Government of India; Virander S. Chauhan, Chairperson, UGC; and Kewal K. Sharma, Secretary, Department of Higher Education, MHRD, Government of India, and many distinguished academicians.

There were more than 400 participants, primarily consisting of users and potential users of these IUCs, representing more than 120 universities and higher education institutions across the country, and which included about 25 private universities.

The programme started with the felicitation of the special guests and the Directors of the four IUCs. Virander S. Chauhan welcomed the participants and gave a brief address highlighting the motivation behind the meeting, which was to get to know the functioning of the IUCs and discuss how to make their facilities accessible as widely and seamlessly as possible, as well as to bring together current users and those who have not yet used the IUCs for a fruitful exchange.

In his presentation, Jayant V. Narlikar, Founder Director, IUCAA, recounted the tale of IUCAA which was created in 1988, when Yash Pal was the Chairperson of the UGC, in response to the need of the time. Like the other IUCs, IUCAA was established as an autonomous institution whose purpose was to rectify the (then) lack of an organic



relationship between research institutes and universities. Narlikar described Yash Pal's many expectations of IUCAA, which included that IUCAA become a world class centre for excellence that provides a quality of academic and experimental environment not easily available to the university community in their own place. Narlikar argued that IUCAA has succeeded in meeting all of these challenges.

Prakash Javadekar gave an engaging address focusing on the need for innovation and research, particularly in the context of contemporary Indian society. He highlighted educational schemes such as Swayam which are benefiting from both technological development as well as



partnership with private entities, and are now reaching lakhs of students as well as teachers with high quality educational and training content. Science and technology, Javadekar said, are therefore enriching the educational sector, which in turn will enrich society and make it prosper. In this context and atmosphere, he

pointed out, the IUCs play a key developmental role by providing platforms for the University sector to engage in collaborative and innovative research together with scientists.

There were presentations by the four Directors: Somak Raychaudhury, IUCAA, Pune; Dinakar Kanjilal, IUAC, New Delhi; Ajit K. Sinha, UGC-DAE CSR, Indore; and Jagdish Arora, INFLIBNET Centre, Gandhinagar. Each of them gave a report on the facilities available at the respective Centres, and how the university community has been using these.

There were presentations by Dipankar Bhattacharya from IUCAA, on Major Facilities at IUCAA: Present and Future; N. Madhavan from IUAC, on Renaissance in Accelerator based Research and Development; and Vasudeva Siriguri from UGC-DAE CSR, on Research using Mega-Projects by Universities and Institutions in India.

Selected users of three IUCs made presentations: (i) Harinder Pal Singh, from the University of Delhi, presented on IUCAA-Universities Interaction: An Associate's Perspective, (ii) Prasenjit Sen, from Jawaharlal Nehru University, New Delhi, on Opportunities and User Experiences at the IUAC, and (iii) Shankar I. Patil, from Savitribai Phule Pune University, on UGC-DAE CSR: A User's Perspective.



Kewal K. Sharma addressed the participants and stressed that the educational scenario in India has been expanding in a big way, as regards both institutions of excellence such as IITs, IIMs, scientific institutions, etc. as well as Central and State universities. This meeting, he said, was therefore a very useful opportunity for stock taking. Sharma highlighted several examples of Government initiatives that are currently in place or still being discussed, with the aim of addressing the question: Do adequate facilities exist to nourish the quest of those who are already teaching and those who are potential students? These included ideas for increasing and easing access between universities and scientific laboratories, enabling



digital/online education, implementing reforms that give more autonomy to top-ranked universities, incentivising talented students to pursue PhDs in India, facilitating teacher training through schemes such as the Pandit Madan Mohan Malviya Teachers Training Programme and increasing access to higher education across the country in general.

There was a Panel Discussion led by Jagdish Arora, Virander S. Chauhan, Dinakar Kanjilal, Somak Raychaudhury, and Ajit K. Sinha. At the outset, Raychaudhury mentioned that the main and general discussion would be the way, in the future, how the IUCs and UGC could interact with the universities in their research and teaching enhancement. He invited comments from participants who have never used IUC facilities, as well as IUC users who have benefited from their interaction and could suggest what more the IUCs could do.



The salient features (selected) that emerged from this discussion were:

- (a) In keeping with Yash Pal's vision, the IUCs serve a very important role providing centralised facilities, which are not easily available to individual universities, but which the university community can visit and use.
- (b) All subjects are not covered in these IUCs, and it was suggested to have other such centres for other subjects.
- (c) Many were in favour of de-centralising such central facilities. In particular, a need was felt for branching out into regional centres, with not-so-large facilities as local training centres.
- (d) Considering the heavy teaching load on most teachers, ideas are needed on how to support a large number of research projects for under-graduate and post-graduate students.
- (e) There was emphasis on the colleges and universities in rural India, where good science has been done but where the human resources created have less opportunities.
- (f) There was a feeling that the funds for research under projects to college/university teachers were shrinking, and this should be taken into consideration.

A summary and report of the discussion would be forwarded to the UGC and the MHRD.

Somak Raychaudhury concluded the meeting with a vote of thanks to the HRD Minister; the Secretary of the Department of Higher Education; the Chairman, UGC, for initiating the idea for this unique event; the IUC Directors; all the participants, who attended at short notice; and the teams at IUCAA, IUAC and UGC-DAE CSR who worked behind the scenes to make the event a success.



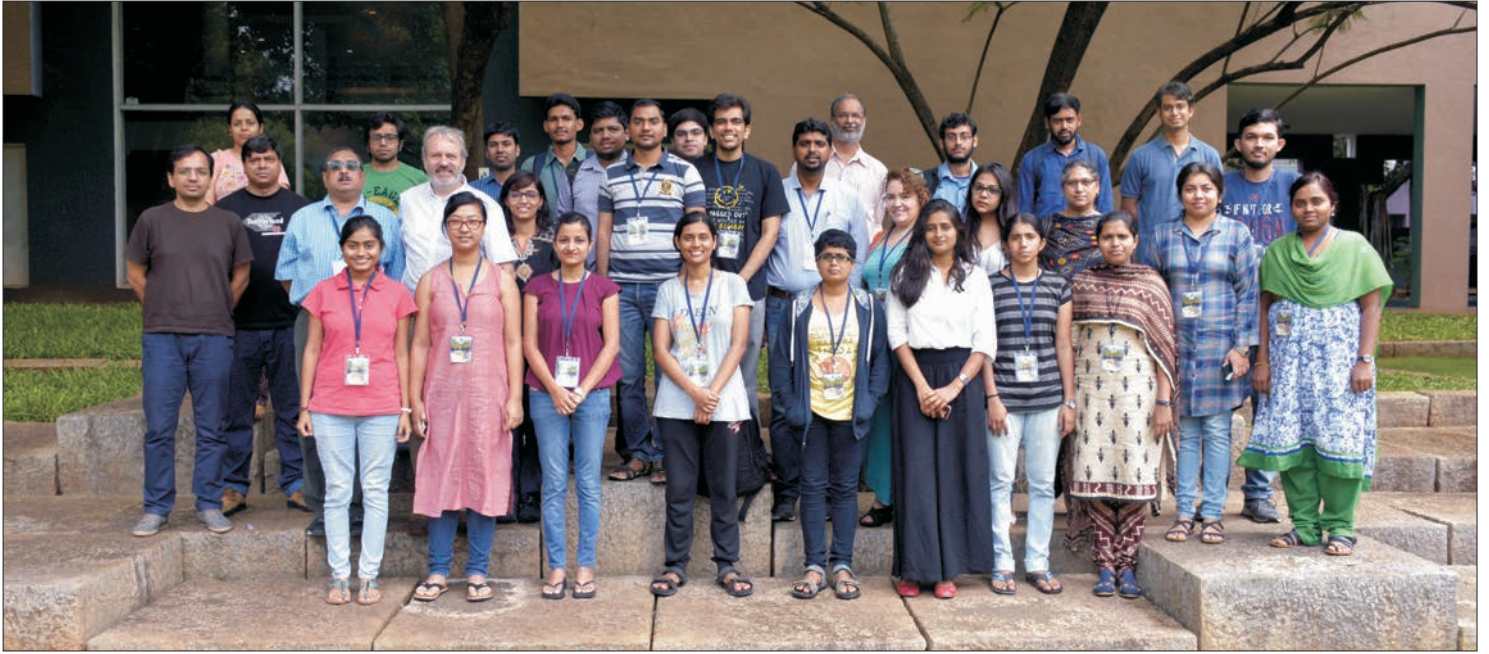
Meeting on Plasma Universe and its Structure Formation



Cosmology and structure formation have been the cornerstone topics of modern astrophysical research. The new grounds to be uncovered would conceivably involve the plasma nature of the universe. Magnetic fields are ubiquitous, probed on all scales from stars to galaxies and galaxy clusters, and play an important role in many cosmological contexts. Overall, there is a great potential in combining studies of the plasma nature of the universe with its formation aspect. Keeping this interesting possibility in mind, a Meeting on Plasma Universe and its Structure Formation was held during August 30 - September 1, 2017 at IUCAA. There were about 45 participants from IUCAA, other institutes and universities in India and abroad. Talks were arranged covering various topics related to structure formation and evolution of magnetic fields. The meeting was coordinated by Saumyadip Samui (Presidency University, Kolkata) and R. Srianand (IUCAA).



Third Indo-French Astronomical School on Spectroscopy and Polarimetry



Third Indo-French Astronomical School on Spectroscopy and Polarimetry was organized jointly by Centre de Recherche Astrophysique de Lyon (CRAL, CNRS UMR5574, UCBL) and IUCAA, during July 31 - August 8, 2017 at IUCAA. The lectures were given by Ranjan Gupta, A.N. Ramaprakash, Neeraj Gupta (all from IUCAA), G. C. Anupama (IIA, Bengaluru), Harinder Pal Singh (University of Delhi), and Philippe Prugniel (Lyon Observatory, France). The topics covered were on various aspects of Spectroscopy, Polarimetry, Novae and Supernovae, Polarimetry Modelling, Radio Polarization of Galaxies, Spectral Libraries, and Analysis of Spectra. All afternoon sessions were devoted to projects, where the following five projects were given to five groups of students (total number of students were 26, spread from all over the country including, one from Strasbourg, France):

1. Stellar Spectral Classification and Parametrization using ANNs,
2. Polarization Vector Maps of Astronomical Objects,
3. Using Rotation Measure Technique to Constrain Magnetic Field in Distant Galaxies,
4. Novae Polarimetry, and
5. Interpolator for Stellar Spectra.

On the last day, the five groups gave presentations on their respective projects. The IUCAA Post-doctoral Fellows: Isha Pahwa, Sonali Sachdeva, and Kaushal Sharma were mentoring some of the project groups. The joint coordinators of this school were Ranjan Gupta and Philippe Prugniel.



Third BRICS Workshop on Astronomy Infrastructure and Instrumentation



The Third BRICS Workshop on Astronomy Infrastructure and Instrumentation was held at IUCAA, during September 21 - 23, 2017, and attended by astronomers from various Astronomy Institutes and Universities in India, South African (along with DST officials), Russia, and Brazil (who attended via Skype). There was no representation from the Chinese side.

The academic programme was spread during the first two days, and on the third day, there was a meeting on the BRICS working group committee, which essentially summarized the two days deliberations, and formulated the resolution on the framework for Scientific Cooperation in BRICS Astronomy. The academic programme covered both optical and radio astronomy developments at various BRICS countries, and totally there were 20 presentations on various aspects. Overview talks on general astronomy at Brazil, Russia, India, and South Africa were given by Bruno Castilho, Dmitry Bisikalo and Valeriy Vlasjuk, Somak Raychaudhury, and Takalani Nemaugani, respectively.

The workshop was funded by the International Division of the DST, Government of India, and coordinated by Ranjan Gupta from IUCAA, who was a BRICS Indian SOC member, along with Harinder Pal Singh from the University of Delhi.





Congratulations to...

Sanjeev Dhurandhar on being selected for *Majha Sanman Award* by ABP News Network Pvt. Ltd. and for receiving the TMC Award for Excellence by Top Management Consortium, Pune.

Somak Raychaudhury on being elected as *Fellow, National Academy of Sciences, India*.

Durgesh Tripathi on being awarded the *Buti Foundation Award - 2017* in the field of Plasma Science and Technology by the Physical Research Laboratory, Ahmedabad.

Addition to the IUCAA family

IUCAA extends a warm welcome to the new Visiting Associates of the twenty-eighth batch joining for a tenure of three years, beginning August 2017.

New Visiting Associates

1. Dharam Vir Ahluwalia, IIT, Guwahati
2. Arunima Banerjee, IISER, Tirupati
3. Nand Kumar Chakradhari, Pt. Ravishankar Shukla University, Raipur
4. Ayan Chatterjee, Central University of Himachal Pradesh, Kangra
5. Shantanu Desai, IIT, Hyderabad
6. Gaurav Goswami, Ahmedabad University
7. Nandita L. Kalita, Girijananda Chowdhury Institute of Management and Tech., Guwahati
8. Arun V. Kulkarni, BITS-Pilani, Goa Campus
9. Smriti Mahajan, IISER, Mohali
10. Saptarshi Mondal, Bethune College, Kolkata
11. Mahadev B. Pandge, Dayanand Science College, Latur
12. Rutu Parekh, Dhirubhai Ambani Inst. of Information and Communication Tech., Gandhinagar
13. Swarup Poria, University of Calcutta, Kolkata

14. Prabir Rudra, Asutosh College, Kolkata
15. Mohit Kumar Sharma, Jiwaji University, Ghaziabad
16. Gyan Prakash Singh, Visvesvaraya National Institute of Technology, Nagpur
17. Heisnam Shanjit Singh, Rajiv Gandhi University, Papum Pare, Arunachal Pradesh
18. Monika Sinha, IIT, Jodhpur
19. Sunil Kumar Tripathy, Indira Gandhi Institute of Technology, Sarang, Dhenkanal
20. Vinutha Tummala, Andhra University, Visakhapatnam
21. Rashmi Uniyal, Government Degree College, Tehri Garhwal, Narendranagar
22. Deepak Vaid, National Institute of Technology, Surathkal, Mangalore.
15. Mira Dey, Presidency University, Kolkata
16. Sunandan Gangopadhyay, IISER, Kolkata
17. Suresh Kumar, BITS, Pilani
18. Manzoor A. Malik, University of Kashmir, Srinagar
19. Soma Mandal, Government Girls' General Degree College, Kolkata
20. Titus K. Mathew, Cochin University of Science and Technology, Kochi
21. Irom A. Meitei, Modern College, Imphal East
22. Hamida Mir, Government Sri Pratap College, Srinagar
23. Pradip Mukherjee, Barasat Government College, Kolkata
24. Dibyendu Nandi, IISER, Kolkata
25. Rahul Nigam, BITS - Pilani, Hyderabad Campus
26. S.K. Pandey, Pt. Ravishankar Shukla University, Raipur

Extension of term to the twenty-fifth batch of Visiting Associates

1. Bijan Kumar Bagchi, University of Calcutta, Kolkata
2. Sarmistha Banik, BITS - Pilani, Hyderabad Campus
3. Naseer Iqbal Bhat, University of Kashmir, Srinagar
4. Ramesh Chandra, Kumaun University, Nainital
5. Suresh Chandra, Amity Institute of Applied Sciences, Noida
6. Ritaban Chatterjee, Presidency University, Kolkata
7. Suchetana Chatterjee, Presidency University, Kolkata
8. Asis K. Chattopadhyay, University of Calcutta, Kolkata
9. Surajit Chattopadhyay, Amity University, Kolkata
10. Tanuka Chattopadhyay, University of Calcutta, Kolkata
11. Sudipta Das, Visva-Bharati University, Santiniketan
12. Dhurjati P. Datta, University of North Bengal, Darjeeling
13. Ujjal Debnath, Indian Institute of Engineering Science and Technology, Howrah
14. Jishnu Dey, Presidency University, Kolkata
27. Kishor Dnyandeo Patil, B.D. College of Engineering, Sevagram
28. Surajit Paul, Savitribai Phule Pune University
29. Ninan Sajeeth Philip, St. Thomas College, Kozhencherri
30. Shantanu Rastogi, D.D.U. Gorakhpur University
31. Saibal Ray, Government College of Engineering and Ceramic Tech., Kolkata
32. Sanjay Baburao Sarwe, St. Francis de Sales College, Nagpur
33. Saumyadip Samui, Presidency University, Kolkata
34. Anand Sengupta, IIT, Gandhinagar
35. T.R. Seshadri, University of Delhi
36. Vikram Soni, Jamia Millia Islamia, New Delhi
37. K. Sriram, Osmania University, Hyderabad
38. Arun Varma Thampan, St. Joseph's College, Bengaluru

Welcome to . . .

Sreejit Jadhav, Uday Nakade, Abhishek Rajhans, and Prakash Tripathi, who have joined IUCAA as Research Scholars.



RAHUL BASU

Rahul Basu, who has joined IUCAA as the Vaidya-Raychaudhary Post-doctoral Fellow in August 2017. He has spent the previous three years working as a Post-doctoral Fellow at the University of Zielona Gora in Poland. He has obtained Ph.D. degree from the National Centre for Radio Astrophysics, Tata Institute of Fundamental Research (NCRA-TIFR) in September 2014. His research focuses on extensive observations, as well as modelling to understand the mechanism of radio emission from pulsars.



YOGESH CHANDOLA

Yogesh Chandola, who has joined IUCAA as a Post-doctoral Fellow in August 2017. He obtained B.Sc. (2005), and M.Sc. (2007) degrees from the Kumaun University, Nainital. He completed Ph.D. from the National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, Pune in 2013, after which he joined the National Astronomical Observatories, Chinese Academy of Sciences, Beijing, as a Post-doctoral Fellow. His area of expertise is mainly radio spectroscopy and imaging. During Ph.D. he worked on HI 21 cm absorption towards radio galaxies. His research interests also include AGNs, galaxy evolution, and dwarf galaxies. At IUCAA, he will work with MeerKAT Absorption Line Survey (MALS) team lead by Neeraj Gupta and R. Srianand.



PRAKASH GAIKWAD

Prakash Gaikwad, who has joined IUCAA as a Post-doctoral Fellow in August 2017. He has obtained B.Tech. degree (2009) in Production Engineering from the Government College of Engineering, Pune, after which, he worked in John Deere Technology Centre, Pune for 2 years. Then he joined the National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, Pune, in August 2012, and completed his M.Sc. and Ph.D. degrees in July 2017. His research interests are Large Scale Structures, Cosmology, Intergalactic Medium, Quasar Absorption Spectra, Hydrodynamical Simulations, etc.



JITHESH V.

Jithesh V., who has obtained B.Sc. degree in Physics from the University of Calicut, Kozhikode, and M.Sc. and M.Phil. degrees in Physics from Bharathiar University, Coimbatore, in 2007 and 2009, respectively. He joined the Department of Physics, University of Calicut in 2010 as a Research Scholar, and completed his Ph.D. thesis work in 2014. His doctoral research is mainly focussed on the multi-wavelength studies of X-ray point sources in the nearby galaxies. After Ph.D., he worked as a Post-doctoral Fellow at Shanghai Astronomical Observatory for three years and received the prestigious fellowship, "Chinese Academy of Sciences President's International Fellowship Initiative (CAS PIFI)" for international scholars. In September 2017, he has joined IUCAA as a Post-doctoral Fellow, and areas of his current research are: Multi-wavelength studies of active galactic nuclei, Search of X-ray transients and its multi-wavelength counterpart studies, and Spectral and timing studies of ultra-luminous X-ray sources.



RUPAK ROY

Rupak Roy, who has joined IUCAA as a Post-doctoral Fellow in August 2017. He has obtained B.Sc. degree (2002) in Physics from the University of Calcutta, Kolkata, and MSc. degree (2005) in Physics from the University of Delhi. He completed his Ph.D. from ARIES, Nainital in 2013, after which, he was in the University of Liege, Belgium, and the University of Stockholm, Sweden as a Post-doctoral Researcher. His research is mainly focused on the Cosmic Explosions like Supernovae, Tidal Disruption Events, Superluminous Supernovae and Gamma Ray Bursts. He also worked on the observational aspects of extremely energetic outflows from AGNs and Radio Galaxies. In IUCAA, he will be involved in similar research work using different Indian astronomical facilities, like AstroSat, 3.6 m DOT, HCT, and GMRT, and also by using data from other observatories throughout the world.



KAUSHAL SHARMA

Kaushal Sharma, who has graduated in Physics (Honours) from Ramjas College, University of Delhi in 2008, and continued to pursue Master's in Physics from the Department of Physics and Astrophysics, University of Delhi, after which, he joined the same department for his Ph.D. degree on stellar spectroscopy in October 2011. During his Ph. D., he primarily worked on the parametrization of cool stars (late K and M type) and developed automated methods for their parameter estimation. He has joined IUCAA as the Raja Ramanna Research Associate, funded by the Department of Atomic Energy, Government of India, in August, 2017. His research interests are Stellar Spectroscopy, Atmospheric Parametrization of Cool Stars, Properties of Exoplanet Host Stars, Machine/Deep Learning Algorithms and their application to big-data.



PRIYANKA SINGH

Priyanka Singh, who has joined IUCAA in September 2017 as a Post-doctoral Fellow. She has obtained B.Sc. degree (2010) from the University of Rajasthan, Jaipur, M.Sc. degree (2012) from the University of Delhi, and Ph.D. (2017) from Raman Research Institute, Bengaluru. Her research interests include the role of Circumgalactic Medium (CGM) in galaxy evolution, cosmological tools to constrain the properties of the CGM, and X-ray AGNs, and has worked on forecasting the detectability of SZ/X-ray signals from the CGM with various ongoing and upcoming surveys such as SPT, DES, and eROSITA.



V. SREENATH

V. Sreenath, who has joined IUCAA as a Post-doctoral Fellow in August 2017. He has obtained B.Sc. (2006), and M. Sc. (2008) degrees from the University of Calicut, Kozhikode, and Ph.D. (2015) from the Indian Institute of Technology Madras, Chennai, after which, he joined the Louisiana State University, Baton Rouge, USA, as a Post-doctoral Fellow for 2 years. During his Ph.D., he had worked on the primordial non-Gaussianity generated in single field inflationary models. His work focused on studying generation and properties of inflationary three-point functions involving scalar and tensor perturbations in various inflationary models. As a Post-doctoral Fellow, he extended his domain of interests to include the generation of perturbations in alternatives/extensions to inflation, such as classical bouncing scenarios and Loop Quantum Cosmology (LQC). Over the past two years, he has been studying the evolution of perturbation and its observational implications in anisotropic (Bianchi I) spacetime in the context of inflation and LQC. He is currently interested in exploring ways to constrain inflation, and other alternatives/extensions to inflation using data from the observations of cosmic microwave background and large scale structure.

Proposals to Conduct Workshops / Schools Outside IUCAA

Proposals to conduct workshops/schools in Astronomy and Astrophysics or related areas are invited from university departments/affiliated colleges, and the same may be sent to the Administrative Officer, Core Programmes, IUCAA (e-mail: aocp@iucaa.in). It is preferred that the proposals be sent by March 31, 2018 (for the events to be conducted during August 2018 - July 2019), so as to be included in the Academic Calendar of IUCAA for the next academic year. However, in exceptional circumstances, the proposals may be forwarded to the Administrative Officer at any time.

The following details should be given while sending the proposals: (i) The title (topic), (ii) Duration of the workshop/school, (iii) Topics to be covered and number of lectures in each topic, (iv) The level of the audience and their number, (v) The number and tentative names of resource persons expected, (vi) A description of the facilities available, and (vii) The budget estimates (clearly stating the support offered by the host institute).

It is generally expected that the infrastructural facilities and accommodation to the participants as well as the resource persons will be provided by the host institution. Other expenses will be borne by IUCAA. The proposers are encouraged to consult IUCAA faculty while framing the proposals.

Once the workshop/school is approved, IUCAA will nominate a coordinator from its faculty, who will interact with the organiser in relation to the academic programme, budget, and identifying and approaching the resource persons. Preference will be given to those proposals where the expected resource persons are primarily from the host institution and/or from the nearby places.

... Farewell to

Mayukh Pahari, who left IUCAA at the end of his term.

Ravi Joshi, who also left IUCAA at the end of his term.

Atreyee Sinha, who has joined the High Energy Division of the Astroparticle and Cosmology Laboratory, Paris, as a Post-doctoral Fellow.

IUCAA-NCRA Graduate School Courses

The IUCAA-NCRA Graduate School (conducted jointly with the National Centre for Radio Astrophysics (NCRA), Pune) is divided into two semesters (four terms) spread over one year. Each term is of roughly eight weeks duration. During the Graduate School, the Ph.D. students (Research Scholars) are taught relevant advanced courses in Physics and are also introduced to courses in Astronomy and Astrophysics (A & A). The Graduate School structure is given below. The number of teaching hours is shown in brackets after each course.

Semester I, Term I, From August second week to October first week.

01. Methods of Mathematical Physics I (21)
02. Introduction to Astronomy and Astrophysics I (14)
03. Electrodynamics and Radiative Processes I (14)
04. Quantum and Statistical Mechanics I (14)

Semester I, Term II, From October third week to December second week.

05. Methods of Mathematical Physics II (14)
06. Introduction to Astronomy and Astrophysics II (14)
07. Electrodynamics and Radiative Processes II (14)
08. Quantum and Statistical Mechanics II (14)

Semester II, Term I, From January first week to February fourth week.

09. Astronomical Techniques I (14)
10. Galaxies : Structure, Dynamics and Evolution (21)
11. Extragalactic Astronomy I (21)

Semester II, Term II, From March third week to May second week.

12. Astronomical Techniques II (14)
13. Interstellar Medium (14)
14. Extragalactic Astronomy II (14)
15. Project Work (During May - July).
16. Topical Course (for earlier batch of students) (<21)

1. The courses are designed, emphasizing the aspects which are directly relevant to A&A. It is assumed that unnecessary repetition of material, which is already taught at M.Sc. is avoided.
2. The syllabus provides enough avenues for topics which are of "local interest" to be included in the graduate school. This is necessary so that graduate students coming out of IUCAA / NCRA, not only have a comprehensive grasp of the A &w A but

are also aware of the key research areas in which these two institutions are concentrating at present. Detailed syllabus may be found in the website:

<http://www.iucaa.ernet.in/Academics> →Ph.D. Programme.

If any of the Research Scholars from Indian universities/colleges are interested in attending any of these courses, they may contact: The Coordinator, Core Programmes, IUCAA, e-mail: aocp@iucaa.in.

Colloquium

03.08.2017

Kanak Saha on **Galactic spiral structure revisited**, 17.08.2017
 Neeraj Gupta on **Evolution of cold gas in galaxies: The MeerKAT Absorption Line Survey**, and 06.09.2017
 Torsten Ensslin on **Information field theory: The logic of perception, applied to Astrophysics**.

Seminar

05.07.2017

Shivaraj Kandhasamy on **Calibration of advanced LIGO detectors**, 13.09.2017
 Krishna Raj Venkateswara on **Exploring the gravitational universe with LIGO and torsion-balance experiments**, and 20.09.2017
 Dipanjan Mukherjee on **How relativistic jets from massive black holes affect gas in galaxies**.

Public Outreach Activities at IUCAA

Teachers' Workshop on Astronomy in School Textbooks - (July 25 to August 01)



Teachers' Workshop on Astronomy in School Textbooks was conducted during July 25 - August 1, 2017, for secondary school teachers from Akanksha Foundation. Fifteen teachers volunteered from different government Schools Participated in the workshop. Basic astronomy concepts involved in Science and Geopgraphy books were explained along with some demonstrations, role-plays to visualise and to understand these concepts better.

Other Regular Events

The Public Outreach groups conducted 10 science toys workshops, 05 basic astronomy workshops and 10 campus visits with an approximate reach to about 1000 people. The mobile planetarium (Taramandal) was given out to volunteers from College of Engineering, Pune. Their volunteers, trained by IUCAA, reached about 600 people.

Second Saturday Lectures -

July 08 : Jayant Narlikar (IUCAA) -
Collision in Space

August 12 : Avyarthana Ghosh
(IUCAA) - Story of a Star

September 09 : Sudha Rajamani, Chaitanya
Mungi (IISER, Pune) - Life
on Earth: How did it come
about?



MoU on a Rural Astronomy Popularisation Programme



A Memorandum of Understanding was signed between a non-profit organisation Agricultural Development Trust (ADT), Baramati and IUCAA on September 13, 2017. Under this, ADT will fund a van to carry a telescope, a mobile planetarium and some other astronomy education material to rural areas. Two teachers, trained by IUCAA will visit around 250 Zila Parishad government schools in Baramati and conduct programmes over the next 6 months.

From September 11 to 13, some primary school teachers from ADT were trained to handle the mobile planetarium and to conduct the shows for school kids in government schools located in remote villages.

Visitors

(July - September 2017)

Sreejith A.G., Ahmadjon A. Abdujabbarov, Anil Agarwal, Sanaa Agarwal, Gazi Ameen Ahmed, Bobomurat Ahmedov, Rahul Kumar Anand, Ramya Anche, G.C. Anupama, Anjana Ashok, B.S. Athira, Abdul Aziz, Carlo Baccigalupi, Jasjeet Bagla, Kalyani Bagri, Bidisha Bandyopadhyay, Rahul Bandyopadhyay, Dipankar Banerjee, Srikumar Banerjee, Sudhanshu Barway, Viswanath Bavigadda, Arun Bharadwaj, Priya Bharali, Pallavi Bhat, Sachin Bhatt, Parag Bhattacharya, Sudip Bhattacharyya, Kalyani Bhopi, Yashpal Bhulla, Priyanka Biradar, Paul Boley, Debasish Borah, Anshuman Borgohain, Mary Bosco, David Buckley, Mridusmita Buragohain, Krishnaprasad C., Sumanta Chakraborty, Luke Chamandy, Ramesh Chandra, Sunil Chandra, Suresh Chandra, Gaayatri Chandrasekharan, Ritaban Chatterjee, Rwitika Chatterjee, Soumyadeep Chatterjee, Subhamoy Chatterjee, Asis Kumar Chattopadhyay, Virander S. Chauhan, Jungyeon Cho, Sheetal Chopde, Sundeep Chopra, Arnab Rai Choudhuri, Gulafsha Begom Choudhury, Madhurima Choudhury, Rudrani Kar Chowdhury, Sourav Roy Chowdhury, Abhishek Das, Sudip Das, Anirban Dasgupta, Bipash Dasgupta, Abhirup Datta, Kanan Kumar Datta, Sudeb Ranjan Datta, Debabrata Deb, Ujjal Debnath, Swati Deshmukh, Sangeeta Dey, Prasun Dhang, Karishma Dhanmeher, Tanuj Dhar, Reetika Dudi, Jayanta Dutta, Prasun Dutta, Phanindra D.V.S., K.S. Dwarakanath, Torsten Ensslin, Savithri Ezhikode, Anjasha Gangopadhyay, Sunandan Gangopadhyay, Samskruthi Ganjam, Sharad Gaonkar, Prachi Garella, Akash Garg, Lijo Thomas George, Debabrata Ghorai, Tathagata Ghosh, Gourab Giri, Rupjyoti Gogoi, Pranjupriya Goswami, Umananda Dev Goswami, Anil

Kumar Gourishetty, Priya Goyal, Labanya Kumar Guha, Ajesh Gulati, Anshu Gupta, Pawan Kumar Gupta, Prateek Gupta, Rita Gupta, Sowmya H. K., K.P. Harikrishnan, Debashish Hazarika, Thomas Paul Edwin Auf Der Heyde, Mathew Hilton, Tanvir Hussain, Sebastian Hutschenreuter, K. Indulekha, Rabiul Islam, Safiqul Islam, Namitha Issac, Ismail Jabilullah, Joe Jacob, M.N. Jadhav, Sitha K. Jagan, Sandhya Jagannathan, Rishabh Jain, Sumit Jaiswal, Priyanka Jalan, Abdul Jaleel, Sharda Keshav Jogadand, Reju Sam John, Justin Leonard Jonas, Charles Jose, N. Jose, Reetika Joshi, Kanti Jotania, Bakhtinur Juraev, Anusree K.G., Sonali Kadam, Md. Mehedi Kalam, Shivaraj Kandhasamy, Dinakar Kanjilal, Tejpreet Kaur, Tanazza Khanam, Dhramadri Khata, Santosh Kumar Khetan, Dilip Krishnaswamy, Abhinav Kumar, Arvind Kumar, Pravir Kumar, Sushil Kumar, Varun Kumar, Ashu Kushwaha, Rahul Kumar Kushwaha, Sathyanarayanan Kuzhikkatt, Ioannis Kypriotakis, Amit Lad, Patricia Andrea Rojas Lobos, Raghu Prasad M., Sreelakshmi M., Gordon Burtis Macleod, Mahith Madhanakumar, N. Madhavan, Tarun Maity, Amit Kumar Mandal, G.D. Mandlik, Arun Mangalam, Sujay Vivek Mate, Irom Ablu Meitei, Ashish Mhaske, Raju Mishra, Dhrubaditya Mitra, Nitin Mohan, Anupama Mohanan, Abhishek Mohapatra, Ananya Mohapatra, Ashok Mondal, Debasish Mondal, Tushar Mondal, Dipanjan Mukherjee, Sajal Mukherjee, Jayant Murthy, Sindhu N., Nikhil Naik, Sachindra Naik, Deepak Nair, K. Rajagopalan Nair, K.G.S. Nair, Remya Nair, Dibyendu Nandi, D. Narasimha, Rajalakshmi Narayanan, Nilam Navale, Sushree Sangeeta Nayak, Douglas Takalani Nemaungani, Angel Priyana Noel, Devendra Ojha, Amitesh Omar, Mahesh P. K., Sreejith Padinhatteeri, Rita Paikaray, Sabyasachi Pal, Anil K. Pandey, S. K. Pandey, Shashi Bhushan Pandey, Mahadev Pandey, P.N. Pandita, Vaibhav Pant, Rutu M. Parekh, Padmakar S. Parihar, Ritesh Patel, Sameer Patel, Raju Pathrabe, Raagini Patki, Surajit

Paul, Pramod Pawar, Khun Sang Phukon, Nagamani Poloji, Stephen Brian Potter, Alexey Pozenenko, Jayadev Pradeep, Ananta Charan Pradhan, Anirudh Pradhan, P. N. Prakash, Philippe Prugniel, Frederick J. Raab, Tanya Rabban, Mizanur Rahaman, Mainpal Rajan, Akshay Rana, Sandeep Rana, A. R. Rao, Ajay Ratheesh, Divya Rawat, Sadhna Relia, Amit Reza, Surojit Kumar Roy, Agniva Roychowdhury, Ashok Rupner, Dongsu Ryu, Piyali Saha, Sunder B. Sahayanathan, Sandeep Sahijpal, Gautam Saikia, Saumyadip Samui, Shishir Sankhyayan, Varun Saraswat, Iftikar H. Sardar, Samyadip Sarkar, Suman Sarkar, Rathin Sarma, A. Sasikumar, Seema Satin, S. Seetha, Anjan Ananda Sen, Anand Sengupta, T.R. Seshadri, Amit Seta, Shiv Sethi, Zahir Ahmad Shah, Md. Arif Shaikh, Nigar Shaji, Aishawnniya Sharma, Kewal K. Sharma, Kaushal Sharma, Mohit Kumar Sharma, Prateek Sharma, Rahul Sharma, Rajiv Sharma, Ramkishor Sharma, Ranjan Sharma, S. K. Sharma, Shashank Sharma, Umesh Sharma, Vipin Kumar Sharma, Hrishikesh Shetgaonkar, Kalpana Shukla, Anvar Shukurov, Alka Singh, Avinash Singh, Avneet Singh, G. P. Singh, H. P. Singh, Heisnam Shanjit Singh, K. P. Singh, Nishant Singh, Prithvi Raj Singh, Raghvendra Singh, Ajit Kumar Sinha, Aneesh Sivasankaran, Satish Sonkamble, Binod Sreenivasan, Seshadri Sridhar, K. Sriram, L. Sriramkumar, Abhishek Srivastava, Arun Srivastava, Pieter Stronkhorst, Annapurni Subramaniam, Abhinav Sundar, S. Sunil, Fency Sunny, Sharanya Sur, Avinash Surendran, Pieter Swanevelder, Lekshmi T., Jayant Tamarapalli, Amit Tamrakar, Devika Tharakkal, Bhagyashree Todankar, Pranjali Trivedi, Paniveni Udayashankar, Amrita Unnikrishnan, Sanil Unnikrishnan, Anisul Ain Usmani, Bhargav Vaidya, Krishna Raj Venkateswara, Mahendra Kumar Verma, N. Viswanatha, Valerii Vlasiuk, Bal Krishna Yadav, Jaswant Kumar Yadav, Naveen Yadav, Rohin Kumar Yeluripati, Dileepkumar Joshi Yogeshkumar, and Fauzan Zaid.

Visitors Expected

October 2017

Oluwashina Adegoke, IISc, Bengaluru; Tomaso Belloni, INAF Brera, Italy; Maitraya Bhattacharyya, IISER, Kolkata; K. G. Biju, W.M.O. Arts and Science College, Kerala; Mahasweta Biswas, IEST, Kolkata; Swadesh Chand, Guru Ghasidas Central University, Bilaspur; Payaswinee Dhoke, Dharampeth M.P. Deo Memorial Science College, Nagpur; Savithri Ezhikode, St. Thomas College, Kozhencherri; Shounak Ghosh, Indian Institute of Engineering, Science and Technology, Kolkata; Yaghoub Heydarzade, Azarbaijan Shahid Madani University, Iran; David Hilditch, University of Lisbon, Portugal; Swetha Indira, Mahatma Gandhi University, Kottayam; Asif Iqbal, RRI, Bengaluru; Dhairyashil Jagadale, Hyperions Research Labs, Pune; Reju Sam John, Pondicherry University; Kanti Jotania, M. S. University of Baroda, Vadodara; Y. Rohin Kumar, University of Delhi; Arun Kulkarni, BITS-Pilani, Goa; Shahnawaz Malik, University of Kashmir, Srinagar; Nairwita Mazumder, Washington State University, USA; Mahadev Pandge, Dayanand Science College, Latur; Devraj Pawar, R. J. College, Mumbai; Khun Sang Phukon, IIT, Kanpur; B.S. Ratanpal, M.S. University of Baroda, Vadodara; Luiz Felipe Rodrigues, University of Newcastle, UK; Vishant Shah, Neotech College of Applied Science and Research, Vadodara; Arijit Sharma, Helmholtz Institute Mainz, Germany; Swarnim Shashank, Centre for Excellence in Basic Sciences, Mumbai; Avinash

Surendran, IIA, Bengaluru; Rajalakshmi T. R., Mahatma Gandhi University, Kottayam; Vithal Tilvi, Arizona State University, USA; Alex Vano-Vinuales, Cardiff University, UK; and Federico Vincentelli, Brera Astronomical Observatory, Italy.

November 2017

Chetan Bavdhankar, Savitribai Phule Pune University; Sudipta Bhattacharjee, Jadavpur University, Kolkata; Nabajit Chakravarty, Meteorological Office, Imphal; Kishore Iyer, IISER, Thiruvananthapuram; Pravir Kumar, IISER, Bhopal; Sneha Prakash M., Christ University, Bengaluru; Helen Mason, University of Cambridge, UK; Ablu V, Modern College, Manipur; Abhishek Parida, Jamia Millia Islamia, Delhi; Shishir Sankhyayan, IISER, Pune; Ramkishor Sharma, University of Delhi; Alkendra Singh, Banaras Hindu University, Varanasi; Mudit Srivastava, Physical Research Laboratory, Ahmedabad; Vipin Sudevan, IISER, Bhopal; Sharanya Sur, IIA, Bengaluru; Pulat Tadjimuratov, Ulugh Beg Astronomical Institute, Uzbekistan; and Arun Thampan, St. Joseph's College, Bengaluru.

December 2017

Dharam Vir Ahluwalia, IIT, Guwahati; Gazi Ameen Ahmed, Tezpur University; Md. Sabir Ali, Jamia Millia Islamia, Delhi; Arunima Banerjee, IISER, Tirupati; Suresh Chandra, Amity University, Noida; Abhishek Das, NISER, Bhubaneswar; Debabrata Deb, IEST, Howrah; Broja Gopal Dutta, Rishi Bankim Chandra College, West Bengal; Poshak Gandhi, University of Southampton, UK; Sushant Ghosh, Jamia Millia Islamia, Delhi; Tathagata Ghosh, IIT, Kharagpur; Kishore Iyer, IISER, Thiruvananthapuram; Neal Steven Katz,

University of Massachusetts, USA; Rukaiya Khatoon, Tezpur University; Shibesh Kumar, Jamia Millia Islamia, Delhi; Joseph Kuruvilla, University of Bonn, Germany; Sunil Maharaj, University of KwaZulu-Natal, Durban, South Africa; Bivudutta Mishra, BITS-Pilani, Hyderabad; Debasish Mondal, University of Calcutta, Kolkata; Soumen Mondal, Jadavpur University, Kolkata; Sailo Mukherjee, Ex-North Bengal University, Darjeeling; Rahul Nigam, BITS-Pilani, Hyderabad; Iossif Papadakis, University of Crete, Greece; B. C. Paul, North Bengal University, Darjeeling; Adarsh Ranjan, Institute of Astrophysics, France; Subharthi Ray, University of KwaZulu-Natal, Durban, South Africa; Mohit Kumar Sharma, Amity University, Noida; Ranjan Sharma, P. D. Women's College, West Bengal; Yuri Shtanov, Bogolyubov Institute for Theoretical Physics, Ukraine; H. S. Sunil Sinha, IIT Madras, Chennai; Aneesh Sivasankaran, IIT, Kharagpur; Esha Swaroop, BITS-Pilani, Goa; Lekshmi T., Central University of Tamil Nadu, Thiruvavur; Alexei Toporenko, Sternberg Astronomical Institute, Moscow; Paniveni Udayashankar, NIE Institute of Technology, Mysore; Murli Manohar Verma, Lucknow University; Aditya Vidhate, BITS-Pilani, Hyderabad; Amit Vikram, IIT Madras, Chennai; R. G. Vishwakarma, Universidad Autonoma De Zacatecas, Mexico; Rahul Kumar Walia, Jamia Millia Islamia, Delhi; and Khabbab Zakaria, Jadavpur University, Kolkata.

Long Term Visitors

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

Khagol (the Celestial Sphere)
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