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Editor : T. Padmanabhan (e-mail: nabhan@iucaa.ernet .in)
Design, Artwork and Layout : Manjiri Mahabal (e-mail: mam@iucaa.ernet.in)

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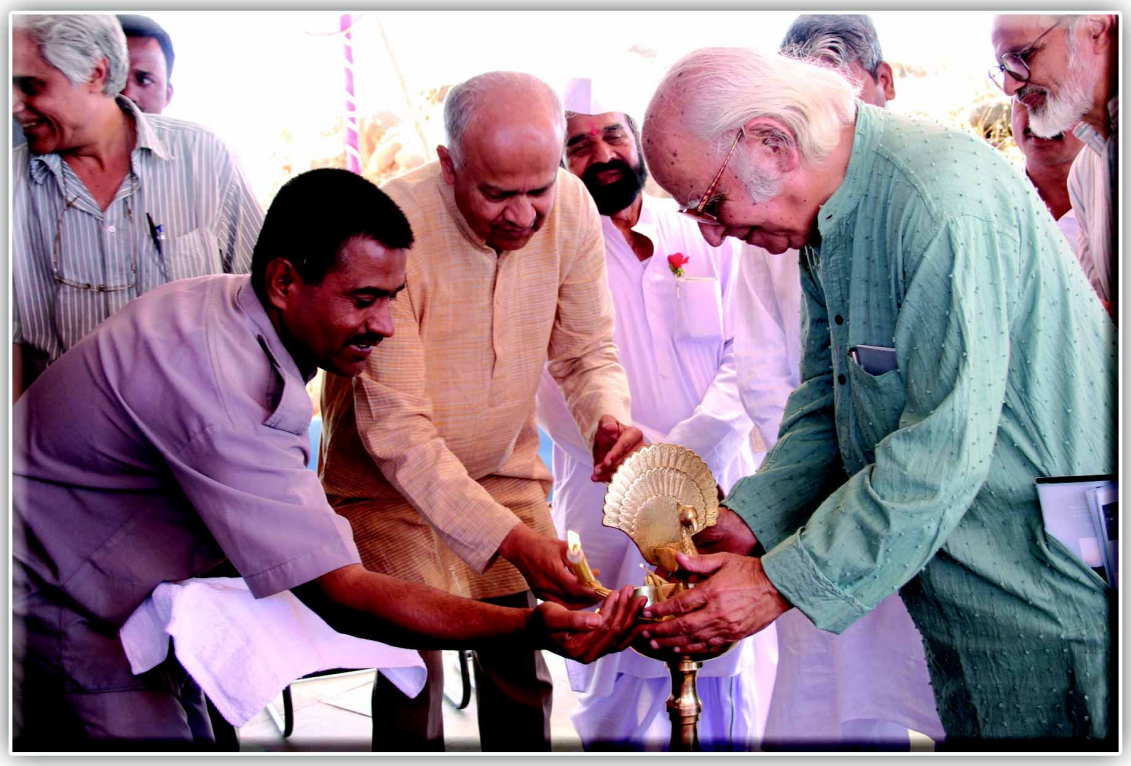


Professors Yash Pal and J. V. Narlikar lighting the lamp on the occassion of the inauguration of the IUCAA Girawali Observatory

Inauguration of IUCAA Girawali Observatory was on May 13-14, 2006. After a long and eager wait, installation and commissioning of the 2- metre telescope was completed in February this year. Soon after its commissioning, the telescope was put to use for photometric and spectroscopic observations; it delivered good images and on several occassions images sharper than 1" were obtained. The telescope was formally inaugurated and dedicated to the nation in a simple ceremony on May 13, 2006. In the morning, members of IUCAA, many astronomers from universities and other institutions, and people

Highlights of the inauguration and dedication ceremony of the IUCAA Girawali Observatory

from Girawali and other villages from the neighbourhood assembled at the site, to participate in the inauguration of the telescope by Professor Yash Pal. In the evening, the IUCAA Girawali Observatory was dedicated to the nation by him in a function held in Chandrasekhar Auditorium of IUCAA. In addition to the dedication speech by Professor Yash Pal, there were brief speeches by N.K. Dadhich, J.V. Narlikar, S.N. Tandon, N. Mukunda, and Russell Cannon - all of them have been intimately connected with the telescope project. On the next day, May 14, there was a technical symposium, in which performance of the telescope and preliminary results obtained were reported by astronomers from IUCAA. In addition, there were several talks by other astronomers on astronomy with moderate size telescopes.

School Students' Summer Programme - 2006

The annual IUCAA School Students' Summer Programme was held from April 17 to May 26, 2006. This programme was started in 1993 for the school students of Pune. It is conducted for six weeks, which gives a glimpse of the pursuit of scientific research to the school-nominated students. Six batches of 20-30 students of class VIII and IX were invited to work on a project at IUCAA. During the period, every week, starting on Monday, teams of 2 - 6 students were attached to volunteering scientists at IUCAA, who guided them on scientific projects. In the spirit of true research, the students and guides worked together unfettered by a set syllabus and time schedules. The students were given access to the IUCAA library and the facilities of IUCAA's Science Exploratorium - the Muktangan Vidnayan Shodhika, like the library, computer section and workshop. To give a finishing touch to their work, on the last working day of every batch, the student teams made presentations about the work they did during the week and submitted a report. This year, the students carried out projects under the supervision of Susmita Chakravorty, V. Chellathurai, Samir Dhurde, Abhay Kohok, Gaurang Mahajan, Vidula Mhaiskar, Jayant Narlikar, Thanu Padmanabhan, Arvind Paranjpye, Ashok Rupner, Saumyadip Samui, Sudipta Sarkar and Kandaswamy Subramanian.

The projects were diverse, covering wide range of topics. Some students estimated the latitudes of various places seeing the IUCAA Foucault pendulum and by observing shadow of gnomon and learned to use trigonometry to measure heights. Two teams made a collection of rock and soil samples around IUCAA to find out various facts about geology. Others studied the properties of electromagnetism, scale of our solar system, Kepler's laws and our planets, earth's structure, tectonic plates, volcanoes, earthquakes, rocks and minerals, weather phenomena, finding time and location from the heavenly bodies, laws of optics, fractals, human anatomy - sensory, nervous, circulatory, pulmonary, skeletal and digestive system. Some of the teams constructed a set of instruments for a school weather station, working model of the human eye, an AC generator, a model depicting movements of the earth during an earthquake, a working model of the IUCAA Samrat Yantra, models of the Cassini space-probe, periscopes and some scientific toys. Besides the team project, the students also had time for joint activities - in the Pulastya building such as, solving puzzles, making scientific toy, exploring the IUCAA science park and viewing popular science movies. Informal interactive sessions with young, budding scientists were organized in which the participants were, Abhishek Rawat, Mudit Srivastava, Sharanya Sur, who are working towards their Ph.D. in IUCAA. Hamsa Padmanabhan, a class XI student who has recently won the second prize in the INTEL International awards, was also invited for a session. Besides answering questions, these young scientists shared their experiences and the joy of doing research in science.

Participants of the School Students' Summer Programme in various activities

Introductory Summer School on Astronomy and Astrophysics

Lectures and practical sessions of the Introductory Summer School on Astronomy and Astrophysics

The Summer School funded by the Department of Science and Technology (DST) of the Government of India was conducted at IUCAA for a month beginning May 15, 2006. Twenty-eight students studying physics at the final year B.Sc. or first year of M.Sc. as well as students of engineering in their third year participated in the school. The programme consisted of a series of lecture courses, evening lectures on special topics, image processing and data analysis sessions and problem solving sessions.

The main areas on which lecture courses given were (i) Astrophysical Processes, (ii) Stars and Stellar Systems, (iii) Gravitation and Cosmology, and (iv) Telescopes, Instruments and Data Analysis. These lectures were given by IUCAA faculty as well as visiting associates of IUCAA.

The special lectures, which were delivered mainly in the evening, were on a variety of special topics ranging from neural networks to application of super computers to various areas of astronomy. Several of these special lectures were delivered by graduate students at IUCAA, and these were very well received by the participants, who got a flavour of the state-of-the-art-research carried out by young students at IUCAA with whom the participants could discuss ideas freely and productively. Students and post-doctoral fellows at IUCAA also conducted several problem-solving sessions, during which the summer school students were encouraged to solve problems on the blackboard for the benefit of all those present. The problem-solving sessions were proved to be very important in conveying finer points of the subject to young students without burdening them with great detail during the lectures. A number of image processing and data analysis sessions with optical and X-ray data were conducted by students and postdoctoral fellows in a special computer laboratory set-up for the purpose. These again proved to be hugely popular with the participants. During the first few days of the school, participants were introduced to facilities at IUCAA like the library, computer centre and the instrumentation laboratory; Participants were also introduced to the use of electronic journals and preprint services. A visit was arranged for the participants to the new IUCAA 2-metre optical telescope and infrared telescope at Girawali.

The reaction of the participants to the lecture courses and practical and problem sessions was very positive and it is hoped that the experience will stimulate some of them to take up a career in Astronomy and Astrophysics. The school was coordinated by Ajit Kembhavi who was ably assisted by the technical and administrative staff.

Details of the programme of the Summer School can be found at http://www.iucaa.ernet.in/html/summer-school06.htm

Welcome to ...

Russell Cannon from Anglo-Australian Observatory, Australia, who was a Visiting Professor at IUCAA has now become an Honorary Fellow of IUCAA.

Sukhadeo Thorat as the Chairperson, University Grants Commission, New Delhi, and President, IUCAA Council.

Archana Bora, who has joined as a Research Scholar under the ISRO - RESPOND Project.

Tuhin Ghosh, who has joined as a Research Scholar.

... Farewell to

Arun Nigavekar, who has retired as the Chairman, University Grants Commission and President, IUCAA Counil.

Vivek Kumar Agrawal, who has joined the Indian Space Research Organisation (ISRO) as a Scientist.

Suparna Roychowdhury, who has joined RRI as a visiting fellow.

Amrit Lal Ahuja, who has joined the Indian Institute of Information Technology, Hinjawadi, Pune.

IUCAA Preprints

Gopal-Krishna, Paul J. Wiita and Samir Dhurde, *Bulk motion of ultrarelativistic conical blazar jets,* IUCAA-21/06; Varun Sahni, *Dark Energy*, IUCAA-22/06; Kishor D. Patil, *Nature of the singularities in higher dimensional Husain spacetime*, IUCAA-23/06; Minu Joy and Ewan D. Stewart, *Inflationary Hubble parameter from the gravitational wave spectrum in the general slow-roll approximation*, IUCAA-24/06; Eriksen, H.K. et.al., *A Re-analysis of the three-year Wilkinson microwave anisotropy pobe temperature power spectrum and likelihood,* IUCAA-25/06; C. Ledoux, P. Petitjean, J.P.U. Fynbo, P. Moller and R. Srianand, *Velocity-metallicity correlation for high-z DLA galaxies: Evidence for a mass-metallicity relation?*, IUCAA-26/06; Ramesh Tikekar and Kanti Jotania, *On relativistic models of strange stars*, IUCAA-27/06; Tarun Souradeep, *Cosmological quests in the CMB sky*, IUCAA-28/06; Amit Pathak, Shantanu Rastogi, *Computational study for neutral and cationic pericondensed polycyclic aromatic hydrocarbons,* IUCAA-29/06.

Indo-French Astronomy Network (IFAN)

The Indo-French Astronomy Network (IFAN) has recently been set up to promote scientific collaborations in astronomy and astrophysics between scientists working in these areas in India and in France. The aim of the network is to provide relatively small grants to enable scientists from the two countries to visit colleagues in the other country for short periods of time. The grants will be provided quickly and in a flexible way to enable visiting scientists to set up new collaborations, to support visits within current collaborations typically in between larger programmes, or to develop project proposals for such larger programmes. IFAN will, therefore, complement the valuable support already being provided under various existing schemes. The resources available to IFAN at the present time allow travel support for French scientists coming to India, and support for Indian scientists for a stay in France. It is expected that more symmetric support can be provided after additional funding becomes available later in the year. The coordinators of the programme are Ajit Kembhavi, IUCAA, Pune, India (akk@iucaa.ernet.in) and Alain Lecavelier, IAP, Paris, France (lecaveli@iap.fr).

Further information about the programme can be found on the IUCAA website at http://www.iucaa.ernet.in/html/ifan.htm

Call for Proposals in Planetary Sciences

Interested researchers from the University sector are encouraged to submit proposals under the new ISRO initiative on Planetary Sciences and Exploration (PLANEX) programme which has been started at Physical Research Laboratory (PRL), Ahmedabad. Detailed announcement and formats for proposals etc are available at the website:

www.iisc.ernet.in/currsci/may252006/1441.pdf

Congratulations to....

T. Padmanabhan for receiving the third prize in the Gravity Research Foundation Essay Contest 2005 [awarded by Gravity Research Foundation, USA] for his essay titled *"Gravity's immunity from vacuum: The holographic structure of semiclassical action"*.

Vacation Students' Programme

Participants of the Vacation Students' Programme

The Vacation Students Programme (VSP) for students in their penultimate year of their M.Sc. (Physics) or Engineering degree course was held during May 15 - June 30, 2006. Eight students participated in this programme. The participants attended about 50 lectures dealing with wide variety of topics in Astronomy and Astrophysics, given by the members of IUCAA and IUCAA Associates. They also did a project with one of the faculty members of IUCAA during this period. K. Subramanian was the faculty coordinator of this programme.

Proposals for holding 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 Chairman, Scientific Meetings Committee, IUCAA, by March 1, 2007 (for events to be conducted during August 2007 - July 2008), so as to be included in the academic calendar for the next academic year.

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 audience and their number (v) the number of resource persons available locally and the number of resource persons expected from IUCAA and (vi) a description of the facilities available and the budget estimates (clearly stating the support offered by the host university/institute).

It is generally expected that 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 proposal.

Once the workshop/school is approved, IUCAA will nominate a coordinator from its faculty, who will interact with the organiser in relation to academic programme, budget, and identifying and approaching the resource persons.

Seminars

12.05.2006 Sanjit Mitra on *Making skymaps of CMB and GWB;* 15.05.2006 Ue-Li Pen on *Rotation in gravitational lenses*; 25.05.2006 and 26.05.2006 Ajit K. Kembhavi on *Super massive black holes*; 01/06/2006 Manoranjan Khan on *Characteristics of dust acoustics waves applicable to Saturn ring*; 19.06.2006 Susmita Chakravorty on *Warm Absorbers : The S-curve analysis*; 19.06.2006 Hum Chand on *Constraints on the variation of fine-structure constant, based on HARPS and UVES/VLT data sample*; 19.06.2006 Atul Deep on *Opto-mechanical alignment of near infrared PICNIC imager*; 19.06.2006 Gaurang Mahajan on *Quantum effects in gravitational fields*;19.06.2006 Tapan Naskar on *Some aspects of wormhole*; 19.06.2006 Abhishek Rawat on *My work in the last one year*; Saumyadip Samui on *Combined semi-analytical models for star formation, reionization and galactic outflows*; 19.06.2006 Arman Shafieloo on *Model independent reconstruction of the expansion history of the universe*; 20.06.2006 Sudanshu Barway on *On the origin of lenticular galaxies*; 20.06.2006 Soumen Basak on *Statistical isotropy of CMB polarization maps*; 20.06.2006 Priya Hasan on *Morphologies and colour maps of AGN host galaxies using HST/ACS in the CDFS-GOODs field*; 20.06.2006 Santosh Joshi on *Variability among peculiar objects*; 20.06.2006 Minu Joy on *From the spectrum to inflation : An inverse formula for the general slow-roll spectrum*; 20.06.2006 Subharthi Ray on *Estimation of the CMB power spectrum*; 20.06.2006 Suryadeep Ray on *Gravitational clustering in redshift space and the non-Gaussian tail of the cosmological density distribution function*; 20.06.2006 Rita Sinha on *Science with virtual observatory* and 21.06.06 Durgesh Tripathi on Solar coronal mass ejections: SOHO observations.

Colloquia

03.04.2006 Hagai Netzer on *Cosmic evolution of black hole mass and metallicity in active galactic nuceli*; 06.04.2006 Anvar Shukurov on *The origins of the European Neolithic*; 24.04.2006 Amitava Raychaudhuri on *The changing face of neutrino physics*; 29.05.2006 R. Sukumar on *Maneaters and rogues: The ecology of wildlife – human conflicts.*

Visitors during April to June 2006

J. Guilet, P.P. Divakaran, H. Netzer, Senorita Devi, P. Roy, S. Rai Choudhury, K. Shanti, U.S. Pandey, Sanjay Pandey, Pankaj Kumar Srivastava, A.A. Usmani, A. Chattopadhyay, T. Chattopadhyay, B. Karimi, A. Raychaudhuri, A. Shukurov, S. Hasan, P. Joshi, P. Kokne, R.S. Yannawar, O. Dixit, L. Chaware, V. Vinu, R. Cannon, S. Bhattacharya, H.C. Bhatt, G. Date, S. Jhingan, Ue-Li Pen, Fini Prasad, M. Anju, P.S. Goraya, U.S. Pandey, H.P. Singh, Ambika, Ninan Sajeeth Philip, S. Ray, P. Chakraborty, Rabin Chhetri, A. Pati. T.P. Prabhu, M. Sami, M. Azam, S. Shevade, D. Vale, R. Sukumar, Deepak Chandra, N. Bhatt, S. Bhattacharya, Sandeep Sahijpal, P. Mukherjee, A. Saha, K.D. Patil, S.S. Prasad, R. Tikekar, T.R. Seshadri, K.P. Harikrishnan, K. Jotania, A.C. Kumbharkhane, M.K. Patil, Nagalakshmi Rao, Lalan Prasad Verma, Akash Pirya, D. Tripathi, S. Rastogi, A. Phatak, and R. Rai.

About 50 people attended the symposium on IUCAA telescope. 28 students attended the Introductory Summer School on Astronomy and Astrophysics and 8 students attended the Vacation Students' Programme.

Visitors Expected

July

V. Morozova, Institute of Nuclear Physics, Tashkent; E. Dergunova, Institute of Nuclear Physics, Tashkent; A. Pradhan, Hindu Degree College, Zamania; A. Paranjpe, TIFR, Mumbai; S.G. Ghosh, BITS, Dubai; D.W. Deshkar, Science College, Nagpur; K.S.V.S. Narasimhan, Chennai, Jogesh Babu, Penn State University, USA; P.N. Pandita, NEHU, Shillong; J.S. Bagla, HRI, Allahabad; H. Kaur, HRI, Allahabad; T.P. Prabhu, IIA, Bangalore, D. Bhattacharya, RRI, Bangalore; Ramsagar, ARIES, Nainital; S.R. Kulkarni, Caltech, USA.

August

G. Calcagni, University of Sussex, UK; Santosh Kumar Pandey, CUSAT, Kochi; K. Jotania, M.S. University, Vadodara; A.A. Usmani, Aligarh Muslim University.

September

J. Dey, Presidency College, Kolkata; M. Dey, Presidency College, Kolkata; B. Ishwar, B.R.A. Bihar University, Muzaffarpur; B.S. Khushwah, B.R.A. Bihar University, Muzaffarpur.

For The Younger Minds - 17

T. Padmanabhan

A textbook demonstration for the fact that sound cannot propagate through vacuum uses an electric bell hung inside a bell jar which is evacuated. In actual demonstrations the noise of the bell becomes increasingly fainter as the pressure is reduced and the bell is quite inaudible when the pressure falls below about 1 cm of mercury. Explain why, inspite of all these, the demonstration is spurious and is not proving that sound cannot propagate through vacuum. Provide the true interpretation of the observations.

Solution to For the Younger Minds - 16

If one assumes that the magnetic moment μ of a tiny dipole arises from a current loop, then $\mu = IA$, where $I = ev/2\pi r$ is the current due to an electron of speed v in an orbit of radius r and $A = \pi r^2$. Further taking $mvr \simeq \hbar$, we get the magnetic moment to be $\mu = e\hbar/2m \approx 10^{-23}$ A m^2. One mole of such atoms, if they are all perfectly aligned, will give a magnetization of $M = 6 \times 10^{23} \times 10^{-23} = 6$ A m^2. A good bar magnet with a volume of about 10 cm^3 containing about 1 mole of atoms will indeed have such a field strength. [It is somewhat fortutious that we get the right answer. Actually, the magnetic moments are due to spins and not orbital motion; in an iron atom, 4 interior electrons with parallel spins usually contribute; not all the ferromagnetic domains will align perfectly and we haven't even worried about finite temperature effects. So, one should probably think of this more as an mnemonic than as a derivation!]

Know Thy Trees - 2

Arvind Gupta and Arvind Paranjpye

Kadamba (Anthocephelus kadamba)

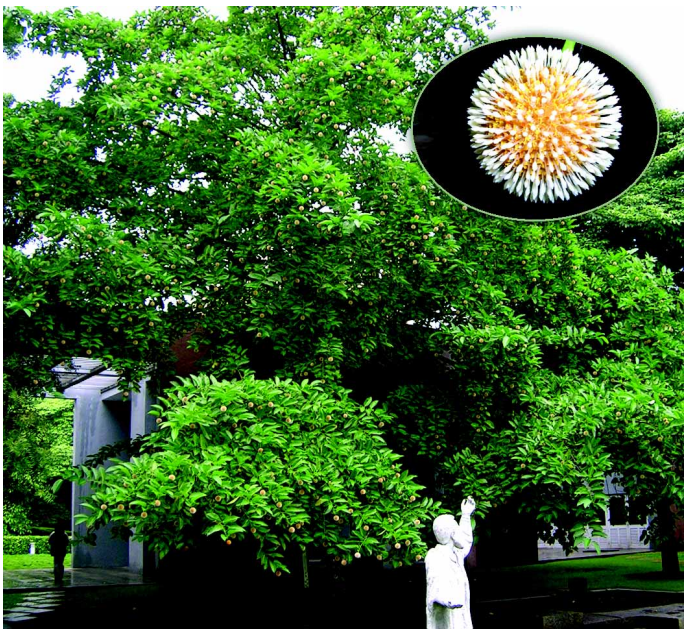
KADAMBA (Anthocephelus kadamba) is a native tree of India. A grand specimen of this tree can be found near the IUCAA Kund (close to the star-dome) towering over all the other trees. Another tree is located outside IV-D Akashganga quarters.

The tree is usually in full bloom by June when the monsoon strikes. In its first few years, this exceptionally fast growing tree spreads and attains a great height. Its paired leaves are large and shiny, broadly oval and heart-shaped at the base. They are slightly hairy and when young, tinged with pink. They are characterised by very prominent parallel veins. The flowers are small and golden yellow, clustered together in rounded heads slightly smaller than a golf ball.

Their styles form a halo round the ball leading to the description of "a treasure so wondrous, of hairy golden orbs." The fruit is minute,clustering together to form black balls. The timber is used for matches and plywood. The bark of the tree is used as an antiseptic.

Its Sanskrit name Neepa means deep rooted. Kadamba is eternally associated with Krishna, who is usually shown playing his flute under the tree.

The green finger for this tree: Planted by Professor K. D. Abhyankar on December 29, 1992.



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IUCAA, Post Bag 4, Ganeshkhind,
Pune 411 007, India

Phone (020) 25691414; 25604100

Fax (020) 25604699

email: publ@iucaa.ernet.in

Web page : **http://www.iucaa.ernet.in/**