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## ***School Students' Summer Programme 2001***



**Some of the participants of the School Students' Summer Programme 2001**

This year's School Students' Summer Programme was held between April 16, and May 25, 2001. Schools in greater Pune were invited to nominate two scientifically motivated students each, and about 150 students from 75 schools participated in this programme. Every week, a new batch of 26 students was invited to work on a project at IUCAA from Monday to Friday. Groups of four to six students were attached to individual guides. This programme has no set syllabus or course guidelines. The students and the guide worked out their schedule for the week.

During the week, the students went through other activities

too. They watched scientific films and visited the Science Park. The students also had free access to the IUCAA library. One day of the week was assigned for question and answer session with Ajit Kembhavi.

On the last day for each batch, the students were asked to give an oral presentation of their work, in addition to submitting a written report. This presentation was followed by a send off party. Students were encouraged to avoid bookish phrases and flowery language in their presentations, and to stress scientific facts. Baring a few incidences, presentations were in true scientific spirit. The friendly atmosphere at IUCAA made students bold

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enough to make constructive criticism.

Students were also asked for their opinions about the programme. Important suggestions made by them were that the programme for each batch of students should be longer in duration and that debates and group discussions should be included. It was also suggested that similar programmes should be conducted in individual schools for the benefit of larger number of students.

Projects done by the students included Foucault's pendulum; lenses, mirrors and prisms; telescopes and

microscopes; solar system; Kepler's laws; Doppler effect; luminosity and temperature; Hubble's law, Olber's paradox, Achilles and the tortoise; non-Euclidean geometry; combinations; calculus; number system and percolation. Most of the students read introductory books on astronomy and other popular science books.

V. Chellathurai, Ranjan Gupta, Vinaya Kulkarni, Jayant V. Narlikar, T. Padmanabhan, Arvind Paranjpye, Anand Sankar Sengupta, T. Souradeep, Arun V. Thampan, Morel Thierry and R.G. Vishwakarma acted as guides for the students.

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### ***International School for Young Astronomers***

IUCAA has been encouraging research students, working in astronomy and astrophysics in the universities, to participate in international schools and workshops, so that they get an exposure to the latest developments in these areas. Attending such meetings also provides research students an opportunity to mix with researchers and students from other countries, which is always an enriching experience. The International School for Young Astronomers, sponsored by the International Astronomical Union and UNESCO, is organized about once a year in different parts of the world, and young researchers from countries in the neighbourhood of the school are invited to participate in it. The 25th ISYA was organized in Chiang Mai University, Thailand, in January 2001 by Michele Gerbaldi of Institute of Astrophysics, Paris, Kam-Ching Leung of the University of Nebraska, and B. Soonthornthum of the Chiang Mai University. IUCAA brought the school to the notice of research students working in Indian universities, and facilitated the participation of some students in the school. A brief report of the activities, prepared by the three Indian students who participated in ISYA25, is given below.

The 25th International School for Young Astronomers (ISYA25) was held during January 3-22, 2001 at Chiang

Mai University, Chiang Mai, Thailand. The goal of this ISYA was to train a group of young science students from the host and the neighbouring developing countries in basic techniques, approaches and reasoning of astronomical research. Nearly all the lectures started at a very basic level and finally provided glimpses of current research. Main emphasis of the lectures was on stellar astrophysics, astronomical measurements, stellar structures and evolutions in single as well binary systems, compact objects, high energy astrophysics and galaxies. Practical exercises on CCD photometric and spectroscopic observations using 16" and 20" telescopes mounted at Sirindhorn Observatory, Chiang Mai and the reduction of the photometric database were also conducted. Three students from Indian universities Sudhanshu Barway (Pt. Ravishankar Shukla University, Raipur) B. Ramachandran (Delhi University) and C.D. Ravikumar (Cochin University of Science and Technology, Kochi) participated in the school. Travel and local hospitality for them were provided by ISYA.

The Indian students gave short talks on their current research work. The ISYA provided a very good opportunity to the students to have fruitful discussions with some of the pioneers in the field of astronomy and astrophysics.



## ***Welcome to the IUCAA Family***

IUCAA is happy to announce the selection of the twelfth batch of its Visiting Associates. The Visiting Associateship is for a tenure of three years, beginning July 1, 2001.

### **New Visiting Associates**

B.N. Dwivedi, Banaras Hindu University, Varanasi.  
S.G. Ghosh, S.S.E.S. Amti's Science College, Nagpur.  
V.K. Gupta, University of Delhi.  
K.P. Harikrishnan, The Cochin College, Kochi.  
Nagendra Kumar, K.G.K. (P.G.) College, Moradabad.  
Yogesh Kumar Mathur, University of Delhi.  
Bikram Phookun, St. Stephen's College, Delhi.  
Farook Rahaman, N.V. College, Nabadwip, West Bengal.  
M.C. Sabu, Christ College, Rajkot.  
D.C. Srivastava, D.D.U. Gorakhpur University.  
Anisul Ain Usmani, Aligarh Muslim University.

### **Extension to the ninth batch of Visiting Associates**

Farooq Ahmad, Kashmir University, Srinagar.  
G. Ambika, Maharaja's College, Kochi.  
Narayan Banerjee, Jadavpur University.  
Subenoy Chakraborty, Jadavpur University.  
Sarbeswar Chaudhuri, Gushkara Mahavidyalay, Burdwan.  
Ashok K. Goyal, Hans Raj College, Delhi.  
Chanda J. Jog, Indian Institute of Science, Bangalore.  
Kanti R. Jotania, Birla Institute of Technology and Science, Pilani.  
R.S. Kaushal, University of Delhi.  
V.H. Kulkarni, University of Mumbai.  
Kamal K. Nandi, University of North Bengal, Darjeeling.  
P.N. Pandita, North Eastern Hill University, Shillong.  
S.N. Paul, Serampore Girls' College, Hooghly.  
Torun C. Phukon, Gauhati University, Guwahati.  
H.P. Singh, Sri Venkateswara College, New Delhi.  
K. Yugindro Singh, Manipur University, Imphal.  
P.K. Srivastava, D.A.V. (P.G.) College, Kanpur.



## ***Forthcoming Events***

**A Brainstorming Session on Liquid Mirror Telescope: An Indian Perspective** is being organised at IUCAA during August 27-28, 2001. Interested persons may please contact A.K. Gupta, Meghnad Saha Centre of Space Studies, Allahabad University, Allahabad - 211 002, e-mail: [akgkiapt@hotmail.com](mailto:akgkiapt@hotmail.com), for further details. The participation to this meeting is *only* by invitation.

**A Workshop on Fundamentals of Astronomy and Astrophysics** will be held at V.R. College, Nellore during September 8-10, 2001. Interested persons may please contact P. Mallikarjuna Reddy, Reader, Department of Physics, V.R. College, Nellore 524 001 (Andhra Pradesh).

**A Workshop on Structure and Dynamics of Galaxies** will be organized at Pt. Ravishankar Shukla University, Raipur, during September 24-27, 2001. Those interested may write to S.K. Pandey, School of Studies in Physics, Pt. Ravishankar Shukla University, Raipur 492 010, Chhatisgarh; e-mail : [ircrsu@bom6.vsnl.net.in](mailto:ircrsu@bom6.vsnl.net.in).

**A Workshop on Celestial Mechanics and Dynamical Systems** will be organised at IUCAA during October 8-11, 2001. Interested persons may please contact L.M.

Saha, Department of Mathematics, Zakir Husain College, Jawaharlal Nehru Marg, New Delhi - 110 002.

**An Introductory School on Astronomy and Astrophysics** is being organised at Rajarshi Shahu College, Latur, during October 15-19, 2001. Interested persons may contact C.S. Mali, Head, Department of Physics, Rajarshi Shahu Mahavidyalaya, Latur 413 512, Maharashtra.

**A Mini-School on Astronomy and Astrophysics** will be held at H.N.B. Garhwal University during October 18-22, 2001. Those who are interested to participate in the workshop may kindly write to K.D. Purohit, Department of Physics, H.N.B. Garhwal University, Garhwal Dist., P.B. No. 25, Srinagar 246 174, Uttaranchal; e-mail: [kdpurohit@rediffmail.com](mailto:kdpurohit@rediffmail.com).

**A Regional workshop on General Relativity and Gravitation** will be held at University of Kalyani during November 21-22, 2001. Those who are interested to participate in the workshop may kindly write to Somenath Chakrabarty, Department of Physics, University of Kalyani, Nadia, Kalyani 741 235, West Bengal; e-mail : [somenath@klyuniv.ernet.in](mailto:somenath@klyuniv.ernet.in).

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### **Workshop on Telescope Making**

In order to propagate the art and science of amateur telescope making, IUCAA is planning to conduct a telescope-making workshop during October 29 - November 15, 2001. Applications to participate in this workshop are invited from educational organisations and amateur astronomers clubs. Selection will be on first-come-first-serve basis. The participation will be limited to 15 teams of two members each.

During this workshop the participants will make a 150 mm diameter Newtonian type telescope mounted on an altazimuth mount of Dobsonian kind. This workshop will train the participants to conduct similar workshops in their own organization.

Local hospitality (lodging and boarding) to the participants during the period of the workshop and travel (as applicable) will be provided by IUCAA. The participants must bear the cost of the material for the telescope, which will be about Rs. 4500/-.

Those interested in participating in this workshop should send their application along with their bio-data to the Coordinator, Core Programmes IUCAA. They should also write how they propose to plan similar activity in their own organization and who will be paying for the material, and the name of the sponsoring organization, if any.

Please note that the cost of the material for the telescope should *not* be sent along with the application. It should be sent only after the formal invitation for participation is received by the applicant.



**Second Level, 2nd workshop on  
Astronomical Photometry and  
Astronomy with Small Telescopes**

The workshop will be conducted at IUCAA during November 19 - 23, 2001. Those who have participated in the First Level workshop on Astronomical Photometry and made their photometer may apply for this workshop. During this workshop, there will be talks on advanced level usage of the photometer and any repair work (if required) will be carried out. The photometers will be used for actual observations.

Those with access to the telescopes up to 16 inch class and would like to take regular astronomical observations either themselves or can organize a team for such purpose may apply to participate in the workshop on 'Astronomy with Small Telescopes'. The purpose of this workshop is to highlight various observing programmes of academic interest, which can be taken up with small telescopes. A field trip will be organized for observations.

All the participants will be given local hospitality (boarding and lodging) during the period of workshop and travel allowance as applicable. Applications should reach by August 16, 2001 to : the Coordinator, Core Programmes, IUCAA.

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**Seminars**

4.4.2001 Zafar Turakulov on *A new axially symmetric stationary vacuum solution*; and 8.6.2001 Koshy George on *Gamma Ray Burst : Where are the missing afterglows*.

**Colloquium**

11.6.2001 Tanmay Vachaspati on *Topological defects in the lab and cosmos*.

**IUCAA Preprints**

Listed below are the IUCAA preprints released during April - June 2001. These can be obtained from the Librarian, IUCAA (library@iucaa.ernet.in)

B.C. Paul, *Viscous cosmologies with extra dimensions*, IUCAA-13/2001; A. Sarkar and T.K. Das, *One parameter solution of spherically symmetric accretion in various pseudo-Schwarzschild potentials*, IUCAA-14/2001; S. Bhattacharyya, A.V. Thampan and I. Bombaci, *Temperature profiles of accretion discs around rapidly rotating strange stars in general relativity: A comparison with neutron stars*, IUCAA-15/2001; T.K. Das, *Accretion powered spherical wind in general relativity*, IUCAA-16/2001; N. Kanekar, V. Sahni and Y. Shtanov, *Recycling the universe using scalar fields*, IUCAA-17/2001; V. Sahni, *Scalar field models for an accelerating universe*, IUCAA-18/2001; P. Singh and N. Dadhich, *Non-conformally flat bulk spacetime and the 3-brane world*, IUCAA-19/2001; D. Mitra and R. Ramachandran, *Scatter broadening of pulsars in the direction of the Gum nebula*, IUCAA-20/2001; R. Srianand and P. Petitjean, *A near-solar metallicity damped Lyman- $\alpha$  system toward the BAL quasar ToI 1037-2703*, IUCAA-21/2001; T. Souradeep and B. Ratra, *Window function for non-circular beam CMB anisotropy experiment*, IUCAA-22/2001; T.K. Das, *On some transonic aspects of general relativistic spherical accretion onto Schwarzschild black holes*, IUCAA-23/2001; S.G. Ghosh and N. Dadhich, *On naked singularities in higher dimensional Vaidya space-times*, IUCAA-24/2001; A.K. Sharma and S. Chandra, *Suggestions for an interstellar cyclopropene search*, IUCAA-25/2001; S. Chandra and A.K. Sharma, *Collisional rates for vibrational transitions in diatomic molecules*, IUCAA-26/2001; A.K. Sharma and S. Chandra, *About the Dunham coefficients  $Y_{20}$  and  $Y_{11}$  for diatomic molecules*, IUCAA-27/2001; R.G. Vishwakarma, *Study of the magnitude-redshift relation for type Ia supernovae in a model resulting from a Ricci-symmetry*, IUCAA-28/2001; N. Dadhich, *Nariai metric is the first example of the singularity free model*, IUCAA-29/2001; Z. Ya. Turakulov and N. Dadhich, *A new stationary vacuum solution dual to the Kerr solution*, IUCAA-30/2001.



## ***Refresher Course in Astronomy and Astrophysics***

Twenty five teachers selected from postgraduate departments of colleges and universities spread all over the country spent five weeks, between May 14 and June 15, 2001 in IUCAA, participating in the biennial Refresher Course in A & A for College/ University Teachers. Joydeep Bagchi and A. N. Ramaprakash were the faculty coordinators.

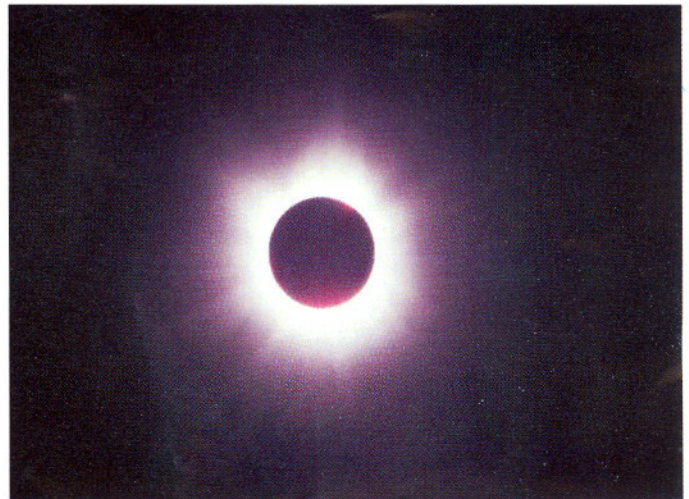
A coherent series of 30 lectures on introductory astronomy and astrophysics, and observational techniques formed the backbone of the course. There were also a number of one or two lecture courses each covering a specific topic of current interest in Astronomy. The lecture sessions were in the forenoons while the afternoons were used for problem solving sessions, laboratory experiments, demonstrations (CCDs, image processing, accessing data over the internet, etc.), solar observations and video shows (Our Sun, Occultation Observations, etc.). Additionally, the participants were encouraged to attend the evening lectures organised along with the Vacation Students' Programme, on exciting topics in Astronomy. Night sessions were also conducted in which participants, in groups of five or six, were introduced to an equatorial-mount 9 inch telescope and encouraged to practise techniques of aligning, pointing, etc. Attempts to do real sky observations were mostly unsuccessful because of adverse weather conditions preceeding the arrival of monsoon.

An one day trip was arranged on May 26, 2001 to the IUCAA observatory site at Giravli and the NCRA Giant Metrewave Radio Telescope site at Narayangaon. Towards the end of the course, feedback forms were distributed and participants were requested to comment on all aspects of their stay including food, accomodation, facilities like library, internet access, etc. From the feedback forms, it was found that the course was successfully conducted to the satisfaction of all participants.



**Participants of the Refresher Course in Astronomy and Astrophysics**

### ***The first Total Solar Eclipse of the Third Millennium***



On June 21, 2001 people in a narrow belt over African peninsula witnessed the first total solar eclipse of the third millennium.

Aadil Desai, a veteran astrophotographer from the Amateur Astronomers' Association (Bombay) Mumbai, took this photograph from Lusaka, Zambia. He used Sigma 600mm, f/8, mirror lens on a Pentax ME-Super SLR camera mounted on a motorised tracking platform. He used Kodak EPP 100 ISO transparency (slide) film for an exposure of 2 seconds to capture the beauty.



## 2001

August 13	<b>IUCAA-NCRA Graduate School</b> First semester begins
August 27-28	<b>Brainstorming Session on Liquid Mirror Telescopes: An Indian Perspective</b> at IUCAA
September 8-10	<b>Workshop on Fundamentals of Astronomy and Astrophysics</b> at V.R. College, Nellore
September 24-27	<b>Workshop on Structure and Dynamics of Galaxies</b> at Pt. Ravishankar Shukla University, Raipur
October 8-11	<b>Workshop on Celestial Mechanics and Dynamical Systems</b> at IUCAA
October 15-19	<b>Introductory School on Astronomy and Astrophysics</b> at Rajarshi Shahu College, Latur
October 18-22	<b>Mini-School on Astronomy and Astrophysics</b> at H.N.B.G. University, Srinagar-Garhwal
October 29 - November 15	<b>Workshop on Telescope Making</b> at IUCAA
November 19-23	<b>Second Level, IInd Workshop on Astronomical Photometry and Astronomy with Small Telescopes</b> at IUCAA
November 21-22	<b>Regional Workshop on General Relativity and Gravitation</b> at University of Kalyani, Kalyani

December 14	<b>IUCAA-NCRA Graduate School</b> First semester ends
December 17-21	<b>Workshop on Interface of Gravitational and Quantum Realms</b> at IUCAA
December 29	<b>Foundation Day</b>

## 2002

January 7	<b>IUCAA-NCRA Graduate School</b> Second semester begins
January 14-18	<b>Workshop on Photometric Data Reduction and Analysis</b> at J.E.S. College, Jalna
February *	<b>Workshop on Utilization of IUCAA Telescope</b> at IUCAA
February *	<b>21st Meeting of the Astronomical Society of India</b> at IUCAA
February 28	<b>National Science Day</b>
April 8-May 17	<b>School Students' Summer Programme</b> at IUCAA
May 10	<b>IUCAA-NCRA Graduate School</b> Second semester ends
May 20-June 21	<b>Introductory Summer School on Astronomy and Astrophysics</b> at IUCAA
May 20-July 5	<b>Vacation Students' Programme</b> at IUCAA

\* dates to be decided

For further details, contact  
**The Dean, Visitor Academic Programmes, IUCAA**  
 or visit : <http://www.iucaa.ernet.in/research.shtml>



## Visitors

(April to June 2001)

D. Lohiya, A.K. Mittal, R.S. Kaushal, T. Clochard, M.N. Anandaram, Koshy George, B.A. Kagali, G. P. Singh, C. Nuangnun, K. Shanthi, A. Rai Choudhuri, B. Bambah, S. Lekshmi, K.N. Joshipura, G. Ambika, C.D. Ravikumar, A. Hajian, G.P. Bhole, R.S. Tikekar, A.C. Kumbharkhane, B. Iyer, M.K. Patil, M. Sami, H.P. Singh, P. Barai, S. Barway, I. Sanyal, M.L. Kurtadikar, S. Sahijpal, M.K. Das, L.M. Saha, S. Chandra, D.B. Vaidya, D. Chandra, P.N. Bhat, S. Chaudhuri, V.C. Kuriakose, S. Das, S.G. Tagare, P. Khare, S. Singh, B.C. Paul, S. Chakraborty, T. Vachaspati, P.K. Srivastava, G. Srinivasan, B.C. Sreekantan, K. Azad Singh, Ng. Ibohal, Lalan Prasad, N.K. Lohani, H.S. Das, A.K. Sen, B.K. Sinha, P. Mallikurjana Reddy, A.S. Jacob, S.S. Prasad, T. Chattopadhyay, B. Phookun, B. Ishwar, L.K. Jha, T.C. Phukon, Rupal Mittal and A. Goyal,

Apart from the above, about 35 college and university teachers and students participated in the Refresher Course and the Vacation Students' Programme.

## Visitors Expected

**July:** K. Jotania, BITS, Pilani; Z. Ahsan, Aligarh Muslim University; S. Pande, CIRI, Nagpur; S. Dave, University of Rajasthan; J. Dey, Maulana Azad College, Kolkata, K.D. Purohit, HNB Garhwal University; P. Vivekananda Rao, Osmania University, Hyderabad; S. Sen, Harish Chandra Research Institute, Allahabad and A.A. Ubachukwu, University of Nigeria

**August:** S. Singh, J.D. Women's College, Patna; P. Baki, University of Kenya.

There will be about 15-20 participants attending the Brain Storming Session on Liquid Mirror Telescopes to be held during August 27-28, 2001.

## *Plea for support of science and the scientists*

Consider the following passionate plea:

'The number of sciences is great, but it may be still greater if the public mind is directed towards them at such time as they are in ascendancy and in general favour with all, when people not only honour science itself but also its representatives. To do this is, in the first instance, the duty of those who rule over them – of kings and princes. For they alone could free the minds of scholars from the daily anxieties for the necessities of life, and stimulate their energies to earn more fame and favour, the yearning for which is the pith and marrow of human nature.'

*Who said this, and when?*

It was Al-Beruni, the Arabian scholar visiting India in AD 1031. It rings true even 970 years later. Who knows, if this plea had been taken note of by the kings and princes, science might have prospered in India during the last millennium.

***Khagol (the Celestial Sphere) is the quarterly bulletin of IUCAA. We welcome your responses at the following address:***

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