



No. 7

THE IUCAA BULLETIN

July 1991



WELCOME TO OUR NEW SENIOR ASSOCIATES & ASSOCIATES

IUCAA is happy to announce the second batch of Senior Associates and Associates who were selected for a tenure of three years beginning July 1, 1991.

Senior Associates

- B.K. Pal, Himachal Pradesh University
- S.G. Tagare, Hyderabad University

Associates

- Man Mohan, K.M. College, Delhi
- Udit Narain, Meerut College, Meerut
- R. Ramakrishna Reddy, Sri Krishnadevaraya University
- A.K. Sapre, Ravishankar University
- P.P. Saxena, Lucknow University
- T. Singh, Banaras Hindu University
- D.C. Srivastava, Gorakhpur University
- S.K. Srivastava, North Eastern Hill University

With this addition, the total number of Senior Associates and Associates on IUCAA's rolls is now 30. As our facilities grow and improve we are able to welcome more and more scientists from the universities and colleges under the Associateship Programme.

Farewell to Manmohan Singh

We bid farewell to Manmohan Singh, President of IUCAA Council, who has joined the Union Cabinet as Finance Minister. We wish him all the best in his new assignment.

VISITS BY SENIOR ASSOCIATES / ASSOCIATES AND OTHERS

- S.M. Alladin, Osmania University
- G.M. Ballabh, Osmania University
- S. Banerjee, Burdwan University
- K.B. Bhatnagar, Zakir Hussain College, Delhi
- S. Chandra, University of Gorakhpur
- H.L. Duorah, Gauhati University
- P.K. Kaw, Institute of Plasma Research, Ahmedabad

- P. Khare, Utkal University
- S. Mahajan, St. Stephen's College, Delhi
- J. Maharana, Institute of Physics, Bhubaneswar
- S. Mukherjee, North Bengal University
- S.K. Pandey, Ravishanker University
- L.K. Patel, Gujarat University
- L.M. Saha, Zakir Hussain College, Delhi
- R.S. Tikekar, Sardar Patel University
- V.R. Venugopal, Madurai Kamaraj University
- S.D. Verma, Gujarat University
- C.V. Vishveshwara, Raman Research Institute, Bangalore

Some of the senior visitors have also brought along their graduate students.

COLLOQUIA

April 1, 1991 : *J. Maharana*, Institute of Physics, Bhubaneswar

Wormholes and the Cosmological Constant

April 22, 1991 : *P.K. Kaw*, Institute of Plasma Research, Ahmedabad

An observed non-linear effect in radiative plasmas

April 29, 1991 : *A. Gore*, Department of Statistics, University of Poona

Statistical dimension of ecological issues

June 17, 1991 : *C.V. Vishveshwara*, Raman Research Institute, Bangalore

Of Bees, Bubbles and Black holes

VISITORS EXPECTED

- Patricia Monger, McMaster University, Ontario, July 21-27, 1991
- Ralph Pudritz, McMaster University, Ontario, July 21-27, 1991
- Jack Sulentic, University of Alabama, July 14-28, 1991
- G. Burbidge, University of California at San Diego, September 10-20, 1991
- M. Rees, Cambridge University, September 15-20, 1991

- J. Audouze, Institute d'Astrophysique, Paris, September 15-20, 1991
- V. Radhakrishnan, Raman Research Institute, Bangalore, September 16-20, 1991
- N.V.G. Sarma, Raman Research Institute, Bangalore, September 16-20, 1991

Due to unavoidable circumstances, A. Borde and R. Stefano could not make the visit announced in the previous issue.

INTERACTION WITH UNIVERSITIES

Visits by IUCAA Members

Jayant Narlikar was deputed by the University Grants Commission on a visit to the United States under the USAID-CSIR Exchange Programme for Senior Scientists. He spent about two weeks at the University of California at San Diego where he has ongoing collaboration with Geoffrey Burbidge of the Center for Astrophysics and Space Sciences. He then visited the California Institute of Technology, Pasadena, the Department of Physics, University of Syracuse, the Naval Research Laboratory in Washington D.C. and the Relativity Group at the University of Maryland, College Park. He also combined his US visit with a brief excursion across the border to Canada at the University of British Columbia, Vancouver and the Canadian Institute of Theoretical Astrophysics, Toronto.

Narlikar gave seminars on his work at each of these places, besides carrying on informal discussions. He used to present a brief 'commercial' on IUCAA before his formal talk. In the Washington area there was an enthusiastic response and expression of interest in IUCAA activities at a meeting of NRI scientific community where he gave a talk on the aims, objectives and progress of IUCAA.

Naresh Dadhich visited Jadavpur University, North Bengal University, Gauhati University and North Eastern Hill University during April 15-20. He gave lectures on *Black Holes in Magnetic field, Gravity without metric and Gravitation: Newton to Einstein*. He also had discussion with faculty and students on their interaction with IUCAA.

Miniworkshop at Garhwal

The direct detection of gravitational waves is one of the most challenging problems in physics today. Success in this field promises the beginning of a new astronomy - *gravitational wave astronomy*.

A miniworkshop on gravitation and gravitational radiation was held at the Physics Department, HNB Garhwal University, Srinagar, 24-27 June. Sanjeev Dhurandhar set the ball rolling by giving an overview on the search for gravitational waves. This was followed by talks on various aspects of gravitational wave research as well as on the gravitation theory. The former set included stochastic gravity wave background (Varun Sahni), coalescing binary signals (B.S. Sathyaprakash), post-Newtonian corrections to coalescing binary signals (Sanjay Wagh) and squeezed light and quantum non-demolition (Patrick DasGupta). The latter set had gravity as a physical interaction (Jayant Narlikar), gravity without metric : a pure spin-connection formulation (Naresh Dadhich and Sucheta Koshti), exact solutions (D.C. Srivastava), partition function in curved spacetime (A.K. Sanyal) and some solutions of the Brass-Dicke scalar tensor theory (A. Pradhan).

There were intense discussion-cum-tutorial sessions in the afternoons. In the evening of 27th June Jayant gave a popular lecture on Fundamental Laws of Physics in Astronomy and Astrophysics which was profoundly appreciated and warmly applauded for his instantly agreeing to speak in Hindi. It was unanimously opined by all those who have heard him in Marathi and English that he is really in his element while speaking in Hindi - a tribute to his Banaras upbringing!

RESCHEDULED EVENTS

The **Image Processing Workshop** which was cancelled due to the Gulf War, has now been rescheduled for July 21-26, 1991. Patricia Monger from McMaster University, Ontario and Jack Sulentic from University of Alabama, will be the resource persons from abroad.

The **Scientific Advisory Committee (SAC) of IUCAA meeting** which was postponed because of the Gulf War has now been rescheduled for

September 16-18, 1991. J. Audouze, G. Burbidge, V. Radhakrishnan, M. Rees and N.V.G. Sarma are expected to come for this meeting.

ASTRONOMICAL DATA CENTRE

An Astronomical Data Centre (ADC), funded by the Department of Science and Technology is being set up at IUCAA. When complete, the ADC will have a large collection of astronomical catalogues and data bases together with software for efficient retrieval of the data.

Some progress has so far been made towards setting up the ADC. A workstation with 600 Mb of disk space has been obtained and networked with other computers at IUCAA. A collection of astronomical catalogues has been obtained from Centre De Donnees Stellaires (CDS), Strasbourg, France and has already been set up on tapes and disks in IUCAA. Computer programmes for reading these catalogues and converting them to the required format are being written and preliminary versions of these should be available by the end of October 1991. A list of various catalogues is being made and this will be circulated to the community so that we may be advised on any catalogues which are not present with us but are important to sections of the community. Astronomers from various institutes and observatories and departments are invited to send their suggestions and also a list of catalogues which may be present with them to Ajit Kembhavi at IUCAA.

DST MEETING

A Group Monitoring Workshop on DST (Department of Science and Technology) funded projects in Astronomy and Astrophysics was hosted by IUCAA during June 21-22, 1991. About 30 scientists including Principal Investigators of the projects, experts and Programme Advisory Committee members attended the Workshop. With a view to expound upon exciting areas of research in A&A, Govind Swarup spoke on the Radio Astronomy with GMRT.

NEW ARRIVAL

We are happy to welcome Dr. N.C. Rana in our fold. He has joined us from TIFR, Bombay.

SUMMER VSP

The response to our advertisement for Vacation Students Programme was very good. Due to several constraints, we could accommodate only 10 students; of that, 8 are attending the VSP which started on June 3. The programme is of 6 weeks duration and will conclude on July 12.

ATTENTION ASTRONOMY & ASTROPHYSICS RESEARCH STUDENTS

We, a group of research students at Pune, are thinking of holding a meeting of research students working in the field of Astronomy and Astrophysics (A&A) * in India. This would be useful in getting to know the kind of work being done by students at various centres and will facilitate interaction among students working in related fields. It will also help us to know about the activities going on in other institutes / universities.

The meeting would be organised and executed entirely by students. The meeting is tentatively planned to be held in Pune around February 1992.

Please send us the following information before the end of August 1991: *Name, Institute / University, Address (for correspondence), Field(s) of research, Number of years in A&A research, Whether interested in attending the meet, Other information.*

Please send your reply to Tarun S. Ghosh at IUCAA. We seek your cooperation in making this proposed meet a success.

* The spectrum of fields covered under the A&A heading is quite broad ranging from instrumentation, computation, observation to theoretical gravitation, early universe, structure formation ...

CANTEEN

IUCAA Canteen started functioning from May 28, Budha Purnima day! For the first week we had outside caterers catering to lunch and dinner. From June 5 onwards IUCAA kitchen became operational and breakfast, lunch and dinner are being served at the Canteen located in the Akashganga complex.

TEA TIME SEMINARS

On Thursdays at 3.30 p.m. we have recently started informal seminars over tea alongwith our NCRA colleagues. In these seminars one can report on half cooked results, outlandish ideas, and interesting papers. The means of communication is strictly the time honoured black-board and chalk.

The Unsolved Mosquito Problem

How to get rid of the mosquitos in IUCAA's vicinity? Here is a sample of solutions offered by some of our visiting experts:

The General Relativist: Make a conformal transformation to send all mosquitos to infinity.

The Inflation Enthusiast: Effect a phase transition in the vicinity of the mosquitos. A rapid inflation will reduce their number density by 10^{-108} .

The N-Body Expert: Computer simulations of 10^5 mosquitos show that most of them will collect at the centre and collapse to a black hole, a few percent will escape to infinity and the rest will form binaries and won't bother the humans.

The Supernova Specialist: The mosquitos will be destroyed only in the aftermath of a supernova explosion within thirty light years of the Earth.

A *Radio Astronomer* claiming to be more practical suggested trapping the mosquitos in the huge wire mesh antennas of our neighbours' Giant Metrewave Radio Telescope.

We are still open to suggestions.

How To Communicate With IUCAA?

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MINIWORKSHOPS

1. Automated Photoelectric Telescopes

IUCAA is developing small (14") automated telescopes, which could be used to make photoelectric observations under computer control. The aim of this development is to provide opportunity to the interested groups in universities of acquiring such telescopes for their own use. (See *Khagol* No.6, April, 1991). In order to discuss the technology of making such telescopes, and the type of observations which could be carried out using these, we are planning a workshop during October 21-25, 1991 at IUCAA. People interested in participating in this workshop should write to **Dr. Ranjan Gupta at IUCAA** for further information.

2. Photoelectric Photometry of Variable Stars

In order to bring together the university groups, particularly in the eastern region of the country, interested in the use of photoelectric photometry, an IUCAA workshop is being planned at Gauhati University during December 2-7, 1991. The topics to be covered include: techniques of photometry with photodiodes and with CCD's, photometry of variable stars, photometric observations of occultation events. Actual observations and data reduction will be other important features of the workshop. People from universities interested in the workshop may write to **Professor H.L. Duorah, Department of Physics, Gauhati University, Gauhati 781 014** for further information.