

# Khagol

Inter-University Centre for Astronomy and Astrophysics  
An Autonomous Institution of the UGC



No. 10

THE IUCAA BULLETIN April 1992

## Welcome to IUCAA Family

The Chairman, UGC has nominated the following distinguished academics from outside to the various statutory bodies of IUCAA for the period 1.1.92 to 31.12.94.

### Governing Body

#### Vice-Chancellors :

Aligarh Muslim University (Professor M.N. Faruqui)

Calcutta University (Dr. R.N. Basu)

Mangalore University (Professor M.I. Savadatti)

#### UGC Member :

Professor Z. Nizam

#### Scientist :

Professor H.S. Mani, Director, Mehta Research Institute

### Scientific Advisory Committee

Dr. R. Bond, Canadian Institute of Theoretical Astrophysics, Toronto

Dr. R. Cannon, Director, Anglo Australian Observatory, Sydney

Professor D. Lynden-Bell, Director, Institute of Astronomy, Cambridge

Professor N.C. Mathur, Indian Institute of Technology, Kanpur

Professor R. Ramachandran, Director, Institute of Mathematical Sciences, Madras

Professor N. Kameshwar Rao, Indian Institute of Astrophysics, Bangalore

Professor N.V.G. Sarma, Raman Research Institute, Bangalore

Professor B.V. Sreekantan, Tata Institute of Fundamental Research, Bombay

### Users' Committee

#### Vice-Chancellors :

Osmania University (Professor V. Iyengar)

Burdwan University (Professor M. Bhattacharya)

Gujarat University (Professor M.N. Desai)

#### Scientists :

Professor K.B. Bhatnagar, Zakir Husain College, New Delhi

Professor H.L. Duorah, Gauhati University

### IAU Commission Officers

In addition to the announcements in the previous issue of Khagol, the following have been elected to the various commissions of the IAU:

*J.C. Bhattacharyya* - President, IAU Commission on Instruments and Techniques

*G. Srinivasan* - Vice-President, IAU Commission on High Energy Astrophysics

*B. Buti* - President, IAU Commission on Interplanetary Plasma and the Heliosphere

Our hearty congratulations to all of them.



Charles Townes at IUCAA



Sorry! No censorship was intended when we forgot to include the following item in the last issue of *Khagol* :

#### Cosmic Censorship

A discussion meeting was held during November 25-29, 1991 on the recent work of P.S. Joshi and I.A. Dwivedi on naked singularities (it should have been reported in January 1992 issue). The authors claim that there exist families of non-spacelike geodesics in the Vaidya-Papapetrou model emanating from the singularity and reaching out. The singularity is strong as curvature diverges all along the trajectories. Besides the authors, P.C. Vaidya, D.C. Srivastava, S.V. Dhurandhar, Patrick Dasgupta and N. Dadhich took part in the ensuing discussion on the cosmic censorship hypothesis.

#### All India

##### Amateur Astronomers' Meet

The Second Meet of All India Amateur Astronomers' at Sevagram, Wardha, during January 4-5, 1992 was organized by Kutuhel and a few of the local organizations and sponsored by IUCAA, DST, ASI and the Chief Minister of Maharashtra. About 150 participants from different parts of the country and about 35 local participants went through fruitful sessions of lectures, demonstrations, model and art work displays related to astronomy. The organization of the next year's annual meet on the National level has been volunteered by Mr. Vatsal Thakkar from the Vikram A. Sarabhai Community Science Centre at Ahmedabad.

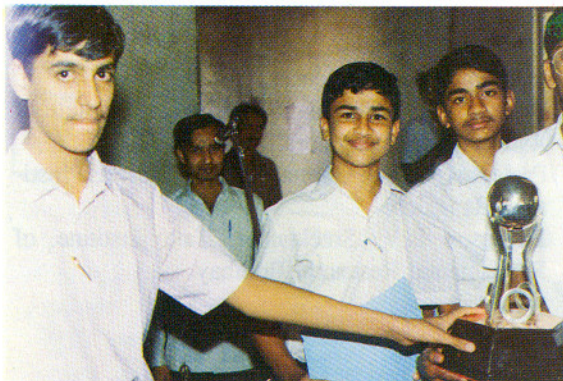
#### Visitors to IUCAA

- Abhay Ashtekar, Syracuse University, USA, December 24 - January 5
- B.K. Pal, H.P. University, Shimla, December 27 - March 18
- L.K. Patel, Gujarat University, Ahmedabad, December 1 - March 31
- Ludmila Kiseleva, Russian State Pedagogical University, Russia, December 18 - June 18
- S.K. Srivastava, North Eastern Hill University, Shillong, January 5 - February 2
- Aliev Alikram, Shemakha Astrophysical Observatory, Azerbaijan, January 14 - 29
- Frank Verheest, Universiteit Gent, Belgium, January 12 - 14
- Probir Roy, TIFR, Bombay, January 20 - 21
- M. Vivekananda, Raman Research Institute, Bangalore, January 20 - 24
- P. Eggleton, Institute of Astronomy, UK, January 23 - February 22
- Joanna Anosova, St. Petersburg University, Russia, January 31 - June 18
- K.H. Mariwalla, Institute of Mathematical Sciences, Madras, February 3 - 7
- N. Kameshwar Rao, Indian Institute of Astrophysics, Bangalore, February 12 - 14

#### National Science Day

The National Science Day celebration at IUCAA went off very well with an overwhelmingly large response from the local schools. There were slide shows, demonstration of on-line computer processed images of the galaxies, a number of scientific magic shows, demonstration of some experiments with laser beams, identification of Venus in the daytime, observation of sun spots and a very lively quiz contest. The Kendriya Vidyalaya, Ganeshkhind bagged the rolling trophy as the first prize, The Hindustan Antibiotics School won the rolling cup as the second prize and The Bishop's School obtained the third prize.

- Charles Townes, University of California, Berkeley, USA, February 13
- B.V. Sreekantan, TIFR, Bombay, February 13
- R.G. Mukhopadhyay, Indira Gandhi Centre for Performing Arts, Delhi, February 26-27
- Charanjit Singh Aulakh, Institute of Physics, Bhubaneswar, March 3 - 5
- A. Sharma, Kurukshetra University, March 6 - 12
- Mukul Kumar, Meerut College, March 9 - 14
- V.L. Chopra, Indian Council of Agricultural Research, New Delhi, March 10-11
- N.C. Mathur, Indian Institute of Technology, Kanpur, March 10 - 12
- Christopher Tout, Institute of Astronomy, UK, March 18 - April 2
- Bikash Sinha, VECC, Calcutta, March 25-27



National Science Day



## Workshops / Schools

A **MINIWORKSHOP ON EARLY UNIVERSE** was organized by the Relativity and Cosmology Research Centre of the Department of Physics, Jadavpur University during January 28-31, 1992. There were altogether thirty six regular participants of whom eighteen were from outstations. The topics covered in the workshop were the inflationary cosmology, extended and double inflation, origin of density fluctuations in the inflationary universe, phase transitions in the early universe, baryon number violation at the electroweak scale, gravitational instantons, evolution of radiogalaxies and quasars, periodicity in quasar redshift, large scale structure of the universe etc. The speakers in the workshop included A.K. Raychaudhuri, Subinoy Chakraborty, S. Mullick, Somnath Chakraborty, N. Panchapakesan, Amitava Mukherjee, S.K. Sethi, Varun Sahni, Patrick Dasgupta, Tarun Ghosh, Debiprosad Duari, S. Mukherjee and V.B. Johri.

The **IUCAA-IIA WORKSHOP ON PLASMA ASTROPHYSICS** was held at the Indian Institute of Astrophysics, Bangalore during March 2-6, 1992. The purpose of the workshop was to familiarize the 1st year Ph.D. students with the basics of plasma physics as well as the exciting problems in the field with the hope that some of the participants will pick up these problems and devote their research careers to solving them. The topics of discussion included (1) physics of plasmas, (2) generation of astronomical magnetic field, (3) magnetohydrodynamic waves, (4) magnetic reconnection, (5) radiative processes in pulsars and quasars, (6) physics of gravitating plasmas and (7) the large scale structure of the universe, the hydrodynamic way. Dr. Vinod Krishan of IIA was the convener.

A **WORKSHOP ON EXPERIMENTAL TECHNIQUES IN SPACE AND ASTRONOMY** was held from February 24-28, 1992 in the Department of Physics and Space Sciences, School of Sciences, Gujarat University, Ahmedabad. The workshop was sponsored by IUCAA and conducted in collaboration with Space Applications Centre, Physical Research Laboratory and Institute of Plasma Research. The main objective of the workshop was to introduce experimental techniques in Astronomy to the PG students, research scholars and faculty members. Eight-

teen talks in different topics were given by experts from the institutes: SAC, PRL, IPR, TIFR, IUCAA, Udaipur Solar Observatory, Saurashtra University, Osmania University, Bhavnagar University and Gujarat University. A night sky observing session was also conducted using telescopes mounted on both azimuth and equatorial mounts. Professor S.D. Verma of Gujarat University was the convener of the workshop.

## Regional Meetings

**TRIVANDRUM** : The regional discussion meeting for the universities in Southern India was held at Trivandrum on January 18, 1992. About 40 participants from various universities and colleges took very active part in the discussions on the use of various IUCAA programmes and facilities for growth of A & A in their departments. There was, in general, a great enthusiasm amongst the participants to interact actively with IUCAA. In the evening J.V. Narlikar delivered a popular lecture on *The Nature of Universe*.

**ALIGARH** : The last meeting in the series of regional discussion meetings was held at Aligarh Muslim University on February 15, 1992 and this covered the Northern region. About 20 participants from various universities and colleges participated. People were interested in incorporating some introductory courses in A & A in their existing programmes. A modular syllabus prepared by IUCAA and which has sufficient flexibility in terms of the topics and experiments to be covered, was given to the participants. There was a general suggestion that regional introductory schools should be held on basic A & A for students and teachers.

Through 7 such meetings, we have covered the entire length and breadth of the country and have acquainted the university and college teachers with the facilities and programmes being developed at IUCAA for them. We hope that this will generate sufficient interaction between university scientists and IUCAA.



## COLLOQUIA

- **Abhay Ashtekar** (Syracuse University, USA) **Quantum Gravity : Old problems and new hopes** (January 3)
- **Frank Verheest** (Universiteit Gent, Belgium) **Beam-plasma processes in the heliosphere** (January 13)
- **Probir Roy** (TIFR, Bombay) **Gravitino mass and cosmology** (January 20)
- **P.M. Bhargava** (CCMB, Hyderabad) **Origin of the first living cell** (January 27)
- **P.V. Panat** (University of Poona, Pune) **1991 Nobel prize in Physics : P. De Gennes** (February 24)
- **V.L. Chopra** (ICAR, New Delhi) **Conventional and modern methods of improving crop varieties** (March 11)
- **Bikash Sinha** (VECC, Calcutta) **Quark gluon plasma - A new state of matter, terrestrial and cosmological** (March 26)

## SEMINARS

**Henry Kandrup** (University of Florida, USA) **Non-violent relaxation** (January 2)

**Aliiev Alikram** (Shemakha Astrophysical Observatory, Azerbaijan) **Physical processes near cosmic strings** (January 22)

**Peter Eggleton** (Institute of Astronomy, Cambridge, UK) **A small step in a giant problem** (February 3); **Triple stars, low-mass x-ray binaries and other related topics** (February 21)

**K.H. Mariwalla** (Institute of Mathematical Sciences, Madras) **Universe as a black hole** (February 5)

**Charles Townes** (University of California, Berkeley, USA) **High resolution spatial interferometry of stars** (February 13)

**Ludmila Kiseleva** (Russian State Pedagogical University, Russia) **Dynamics of small galaxy groups and hidden mass problem** (February 18)

**Joanna Anosova** (St. Petersburg University, Russia) **Dynamical evolution of triple star and galaxy systems** (February 19)

**Anand Karandikar** (Business Management Expert, Pune) **Intellectual Property Rights** (February 25)

**Charanjit Singh Aulakh** (Institute of Physics, Bhubaneswar) **Syncyclons : Evidence for extra dimensions?** (March 4)

**Mukul Kumar** (Meerut College) **On heating of the solar corona** (March 13)

**Christopher Tout** (Institute of Astronomy, Cambridge, UK) **Magnetic dynamo viscosity and spin-down of protostars** (March 23); **Determining the low-mass IMF** (March 30)

## LECTURE SERIES

**Peter Eggleton** (Institute of Astronomy, Cambridge, UK) **Some aspects of evolution of binary stars** (January 31, February 7, 14, 20)

**Ajit Kembhavi** (IUCAA) **Quasar surveys, number and distribution** (March 9, 10)

### THE BENDING OF LIGHT (-AND TRUTH?)

The 1919 Solar Eclipse expedition that provided the first observational evidence for the bending of light by gravity also had a by-product: the problem in probability theory given at the end.

Four observers were deputed to make the measurements: Davidson and Crommelin went to observe in Sobral in Brazil while Cottingham and Eddington went to the island of Principe in the Gulf of Guinea. A great deal depended on their results. Would light show any bending by gravity? Would the effect be as predicted by the (hybrid) Newtonian gravity or double that value as predicted by Einstein?

In an after-dinner speech before they set out, Crommelin referred to the four observers C, C', D and E and hinted that a problem might arise as to the veracity of their claims with so much at stake and given the probability that each of them may be tempted to lie once in a while! The question was subsequently restated by Eddington in the following form:

A,B,C and D each speak the truth once in three times (independently). D makes a statement and A affirms that B denies that C declares that D is lying. What is the probability that D was speaking the truth?

What answer do you get?

### How To Communicate With IUCAA?

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