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Editor: T. Padmanabhan (nabhan@iucaa.ernet.in)
Editorial Assistance: Manjiri Mahabal (mam@iucaa.ernet.in)

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The 20th IUCAA Foundation Day lecture was delivered by Professor Amit Bhaduri on December 29, 2008. He began by elucidating how abstract economic theory was put in the service of the political ideology of neo-liberal economic policies founded on liberalization, privatization and globalization, with a view to give it a 'scientific status'.

He argued that though politically everyone has one vote, it was not so economical where the value of vote is proportional to one's economic strength. The real challenge in a poor democracy is to bridge the gap between the two, and the lecture ended with some suggestions for that.

Twentieth IUCAA Foundation Day Lecture



Professor Amit Bhaduri delivering the Foundation Day Lecture

Congratulations to

Arvind Gupta, on being selected for the *One India One People Award* by Foures Engineering (India) Limited, Mumbai.

T. Padmanabhan, on being elected the *Vice Chairman of C19 Commission on Astrophysics* of the International Union of Pure and Applied Physics (IUPAP) for the period 2008–2011.

P. N. Pandita on being elected a *fellow* of the *Indian National Science Academy*.

Maulik Parikh on being selected for the *Scopus Young Scientist Award in Physics* for the year 2008 by Elsevier India (Science and Technology).

Workshop on Light Scattering: Its Applications in Astrophysics and other Fields



Participants and Lecturers of the Workshop on Light Scattering: Its Applications in Astrophysics and other Fields

IUCAA sponsored workshop was organised by Gujarat Arts and Science College Ahmedabad, during November 7-8, 2008. The workshop was held to mark the centenary year of Mie Scattering Theory (1908); and Gujarat College being pioneer in research in light scattering. The topics covered at the workshop were; light scattering theories, dust models, cometary dust, dust in novae, circumstellar dust, interstellar dust, and intergalactic dust. About thirty five university and college students/teachers participated in the workshop. Scientists, Abhijit Sen (IPR, Ahmedabad); Ajit Kembhavi, R. Srianand, Ranjan Gupta, (IUCAA, Pune); B.G. Anandarao, U. C. Joshi, D. P. K. Banerjee (PRL, Ahmedabad); S. K. Sharma (S.N. Bose Institute, Kolkata), R. V. Mehta (Bhavnagar Univ.), J. N. Desai (Ex-PRL), H. S. Shah (Ex-S.V.R. Engineering College, Surat) and D. B. Vaidya (Ex-Gujarat College) were invited to give talks at the workshop. Ranjan Gupta (IUCAA) and K. G. Chhaya (Gujarat College) were the conveners for the workshop. Partial financial support for the workshop was also provided by Gujarat Council for Science and Technology (GUJCOST).

Welcome to ...

Radouane Gannouji, who has joined as a post-doctoral fellow. His areas of research are Dark Energy Models, Modification of Gravity, and Growth of Linear Perturbations.

Harsha Raichur, who has joined as a post-doctoral fellow. Her areas of research are X-ray Binary Pulsars, and Timing Analysis of X-ray Astronomical Data.

... Farewell to

Abhishek Rawat, who has joined as a Research Geophysicist with MindSET Seismic (Pvt.) Ltd., Panchkula, India.

Performance Enhancement on Emerging Parallel Processing Platforms (PEEP-2008)



Participants of PEEP - 2008

Centre for Development of Advanced Computing (C-DAC), Pune and Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, jointly conducted the workshop on Performance Enhancement on Emerging Parallel Processing Platforms (PEEP-2008) during September 23-27, 2008 at IUCAA. The first objective was to understand performance issues for applications on Multi-Core Processors, GPU Computing using CUDA Programming, GPU- Stream Accelerators, Cell Processors-Cell programming, and Clusters with Multi-Core Processors. The second objective was to make aware of Performance Optimization Techniques and Programming Paradigms on Multi-Core Processors, GPU Computing, GPGPU - Stream Computing and Cell Processor Technology for solving large-scale problems in science/engineering and commercial domains. It provided an opportunity for interaction among the various participants from different academic institutes and research organizations in the country and leading IT company experts, who are working in the area of emerging parallel processing platforms.

PEEP-2008 proceedings, and hands-on (softcopy) document with software were written in order to impart a sense of unity to this expanding and exciting field of parallel computing for this workshop. By understanding the presentation material covered and the programmes in the hands-on softcopy CD as building blocks, scientists and engineers could piece together more complicated software tools that were tailored specifically for their needs in emerging parallel processing platforms using Multi-

Cores, GPU Computing, CPU-Stream Computing, Cell Processors. The PEEP-2008 workshop proceedings covered trends in Multi-Core Processors, Performance enhancement through software multi-threading, Performance analysis tools, Keynote address as of persons from academic institutes and IT company sponsors such as AMD, Intel, HP, IBM, and NVIIDA on Multi-Cores, Application perspective using Multi-Cores, GPU computing, GPGPU, GPU-stream computing and Cell processors technology. Special sessions have been arranged to demonstrate emerging parallel processing technology, such as performance analysis tools on Multi-Cores, Intel Thread Building Blocks (TBB), GPU computing-CUDA, GPGPU Stream Computing and Cell Processors, in which IT company experts actively participated.

The workshop was inaugurated by *Naresh Dadhich*, Director, IUCAA and *S.P. Dixit*, Director, C-DAC. In his message to the participants, *Naresh Dadhich* said that this workshop was beneficial for students, research scholars and industry participants to use emerging parallel processing platforms. Director of C-DAC said that C-DAC was continuously pursuing number of High Performance Computing projects focusing on applications to further achieve a leadership position in emerging parallel processing technology platforms. Interactions with experts from IT company, who partially sponsored this workshop, and participants of this workshop can bring about a lot of new ideas and opportunities for the researchers to start meaningful collaborative activities in this area.

C-DAC and IUCAA view the PEEP-2008 workshop (CD proceedings) and the hands-on sessions document presentation notes as a continuously evolving resource on parallel computing. The concluding session and feedback was conducted by V.C.V. Rao, the workshop Co-coordinator from C-DAC. Sarah Ponrathnam was the coordinator from IUCAA.

C-DAC and IUCAA would like to put on record their sincere thanks to the sponsors, Information Technology companies, Indian Space Research Organisation (ISRO), Department of Information Technology (DIT), collaborators and associates from various institutions for their continuous support, guidance and cooperation. Without their support, the organization of PEEP-2008 would not have been possible.

Workshop on X-ray Timing with ASTROSAT: Science, Techniques and Tools.



Participants and lecturers of the workshop on X-ray Timing with ASTROSAT: Science, Techniques and Tools

A workshop on “X-ray Timing with ASTROSAT: Science, Techniques and Tools” was held at IUCAA during October 13-15, 2008. The Indian Multiwavelength Astronomy Satellite ASTROSAT is due to be launched in about a year’s time, and one of the prime areas of interest to be pursued with it will be accurate and sensitive timing of variable X-ray sources, ranging from stellar mass objects, like isolated pulsars and x-ray binaries to accreting supermassive black holes in galactic nuclei. The emphasis of this workshop was on discussing the new areas in X-ray timing science that ASTROSAT will open up, and the software and data analysis tools that will be required to pursue them.

The workshop was attended by nineteen registered participants, including two from abroad. There was a mix of senior researchers, young faculty members, post-doctoral fellows and graduate students representing various national research institutions and universities.

During the workshop, there was a series of presentations, software demonstrations and extended discussions. Equal amounts of time was devoted to presentations and discussions. A set of requirements for new data analysis tools to address emerging science areas with ASTROSAT was drawn up at the conclusion of the workshop. Dipankar Bhattacharya was the coordinator of this workshop.

IUCAA-NCRA Radio Astronomy Winter School for College and University Students



Participants of the IUCAA-NCRA Radio Astronomy Winter School for College and University Students

The first Radio Astronomy Winter School for College and University Students was conducted by the IUCAA-NCRA Radio Physics Laboratory (RPL), a joint facility of IUCAA and the National Centre for Radio Astrophysics (NCRA), during December 15 - 23, 2008, at Pune. The winter school was attended by about 30 graduate and undergraduate students of Science and Engineering. The participants comprised of about 20 outstation students from different parts of the country and 10 local participants.

Following the goals envisaged for the Radio Physics Laboratory, a major emphasis was placed on a practical 'hands-on' approach for teaching radio astronomy. For understanding the practical/instrumental aspects of radio astronomy, the students conducted instructive observations of Sun and 21cm spectral line from neutral Hydrogen gas of Milky-way using two radio telescopes of 3 m and 4 m diameter, located at the NCRA east campus. They also performed an Optical Faraday Rotation experiment in IUCAA's Radio Physics Laboratory for studying the interaction of polarized light with magnetized matter and understanding its application in Radio Astronomy. In parallel with these experiments, the students were also introduced to various important branches of Astronomy and Astrophysics through a series of lectures delivered by Faculty drawn from IUCAA, NCRA/TIFR and IISER Pune, and a IUCAA Visiting Associate. The subject matter ranged from Radio Telescopes, Astronomical Coordinate Systems, Great Discoveries, the Sun, Milky-way, Pulsars, Dark-matter, Radio Galaxies, Astrobiology - to Quasars, Cosmic Microwave Radiation, Cosmology and Big-bang theory.

During the winter school, the participants visited the Giant Metrewave Radio Telescope Facility (GMRT) operated by NCRA/TIFR and IUCAA's 2m optical telescope facility at the Girawali Observatory near Pune. The programme exposed the young students to the excitement of observations with large telescopes. Throughout the school, the students showed tremendous enthusiasm and curiosity for learning new subjects, and they freely interacted among themselves and with the Faculty Members in several well-planned informal discussion sessions (the 'Kattas'). They prepared and presented their own colourful posters on various interesting topics in Physics and Astronomy. The best teams received handsome prizes. The Radio Astronomy Winter School was coordinated by Joydeep Bagchi (IUCAA) and Bhal Chandra Joshi (NCRA/TIFR).



Participants of the SALT Meeting

Recently, IUCAA has joined the Southern African Large Telescope (SALT) consortium. IUCAA members will be entitled for approximately 6% observing time (equivalent of 16 nights per year) in SALT for the next several years. The telescope is expected to go into regular operations soon. IUCAA has organised the SALT Science working group and Board meeting during November 4-7 2008. In order to initiate scientific collaboration between partner institutions and introduce the science capabilities of SALT to the user community in IUCAA and Indian Universities, a two day meeting on "Science with SALT" was organized during November 3 - 4 2008. This was attended by SALT partners from all over the world. In addition to IUCAA members, about 20 participants from the university sector also took part in the meeting. There were about 20 scientific presentations covering various possible science projects that will be undertaken with SALT. The meeting also provided a platform for the members from the university sector to interact with the SALT partners to discuss various possible scientific collaborations. R. Srianand was the coordinator of this meeting.

Listed below are the IUCAA preprints released during October to December 2008. These can be obtained from the IUCAA Library (library@iucaa.ernet.in).

Sharanya Sur, and Kandaswamy Subramanian, *Galactic dynamo action in presence of stochastic alpha and shear*, IUCAA-27/08; Susmita Chakravorty, Ajit K. Kembhavi, Martin Elvis, Gary Ferland, and N. R. Badnell, *Dielectronic recombination and stability of warm gas in active galactic nuclei*, IUCAA-28/08; Susmita Chakravorty, Ajit K. Kembhavi, Martin Elvis, and Gary Ferland, *Properties of warm absorbers in active galaxies: A systematic stability curve analysis*, IUCAA-29/08; M. Bazarghan, H. Safari, D. E. Innes, E. Karami, and S. K. Solanki, *A nanoflare model for active region radiance: Application of artificial neural networks*, IUCAA-30/08; Ujjaini Alam, Varun Sahni, and Alexei A. Starobinsky, *Reconstructing cosmological matter perturbations using standard candles and rulers*, IUCAA-31/08; Varun Sahni, and Yuri Shtanov, *Cosmic acceleration and extra dimensions*, IUCAA-32/08; Varun Sahni, and Alexei A. Starobinsky, *Two new diagnostics of dark energy*, IUCAA-33/08; and G. C. Dewangan, S. Mathur, R. E. Griffiths, & A. R. Rao, *X-ray emission from active galactic nuclei with intermediate mass black holes*, IUCAA-34/08

Seminars

13.10.2008 Markus Kissler-Patig on *The European extremely large telescope - Project overview*; 21.10.2008 Shrinivas Kulkarni on *The thirty metre telescope*; 22.10.2008 Shrinivas Kulkarni on *Cosmic explosion*; 23.10.2008 Yashodhan Hatwalne on *Morphology of polymer crystallites : A visit through Gaussiana*; 20.11.2008 Saumyadip Samui on *Physics of structure formation and intergalactic medium*; 21.11.2008 Ajith Parameswaran on *Searching for gravitational waves from binary black holes*; 26.11.2008 Sami Dib on *Formation and properties of dense cores in molecular clouds*; 02.12.2008 Kartik Sheth on *Discovery of a cold, low redshift submillimeter galaxy : CARMA observations of AzTEC\J095950.29+0244116.1*; 04.12.2008 Kartik Sheth on *The assembly of galaxy disks and evolution of galactic structures in cosmos - Reconstructing the Hubble sequence*; 11.12.2008 Ue-Li Pen on *Cosmological information galaxy, weak lensing and 21 cm power spectra*; 24.12.2008 Ashutosh Kotwal on *Search for the Higgs Boson*; and 31.12.2008 S.G. Rajeev on *The Hamiltonian dynamics of thermodynamics*.

IUCAA-SRTM University, Nanded Workshop on Data Analysis in Astronomy

School of Physical Sciences of SRTM University, Nanded is hosting IUCAA sponsored workshop on Data Analysis in Astronomy during March 17-20, 2009. This workshop is intended for young teachers, research scholars and post-docs who are working in the area of observational astronomy and wishing to use astronomical data for their research work. A few M.Sc. final year students with Astrophysics background and strong desire in pursuing research in Astronomy will also be considered. The total number of participants will be restricted to 30.

There will be a series of lectures on basics and advanced topics in observational astronomy with an emphasis on extragalactic objects, which will be delivered by eminent scientists from different institutes. In addition to the lectures, half of the time of the workshop will be devoted to give hands-on experience on analysis of optical data on some selected targets using image processing softwares like IRAF, STSDAS, etc. For participating in this workshop, some experience in using Windows software and knowledge of using computers for astronomical data processing is highly desirable and experience in using Linux software will be valuable.

*To participate in this workshop, please send your resume by post or e-mail along with a covering letter to the address given below before **January 30th, 2009**. Ph.D. students, PDFs and young faculty members interested in starting their research career in observational astronomy are particularly encouraged to apply. **They should arrange to send a recommendation letter from their guide or head of the department along with their application.** Participants will be provided free hospitality and accommodation during this workshop. Limited travel support will be available. Those who require travel support should mention that in their applications.*

Contact address:

M. K. Patil,

School of Physical Sciences,
Swami Ramanad Teerth Marathwada University,
Vishnupuri, Nanded -431 606 (M.S.)

Email: mkpatil@srtmun.ac.in, patil@iucaa.ernet.in

Phone: (02462) 229 242, 229 243, Extn. 142

Cell No. 094233 50740

Visitors Expected

January 2009

S.G. Rajeev, University of Rochester, USA; C.S. Stalin, IIA, Bangalore; Atul Deep, Leiden Observatory, The Netherlands; Atish Kamble, University of Amsterdam, The Netherlands; Ng. Ibohal, Manipur University, Imphal; S.N. Hasan, Osmania University, Hyderabad; Priya Hasan, Osmania University, Hyderabad; Varsha Kulkarni, University of South Carolina, USA; A. Kakodkar, DAE; Manjari Bagchi, TIFR, Mumbai; Nishant Mittal, Meerut College; Udit Narain, Meerut College; P.N. Pandita, NEHU, Shillong; Pooja, Meerut College; D.B. Vaidya, Gujarat Arts and Science College, Ahmedabad, Dhrubaditya Mitra, Queen Mary College, University of London, UK; and N. Mukunda, Bangalore; K.K. Nandi, North Bengal University.

Many visitors, including Visiting Associates of IUCAA, are expected to attend the inaugural meeting of the International Year of Astronomy-2009 for the activities to be held during January 9- 10, 2009.

February 2009

L. Sriramkumar, HRI, Allahabad, and J.Y. Vinet, Observatoire de la Cote d'Azur, Italy; Ashish Mahabal, Caltech.

It is expected that about 30-40 participants will attend the X-ray Astronomy School during February 1 to March 20.

March 2009

H. Tagoshi, Osaka University, Japan; Abbas Afsar, Jamia Millia Islamia; Sanjay Sarwe, SFS College, Nagpur.

Visitors

(October - December 2008)

C.S. Stalin, S.K. Pandey, T.R. Seshadri, Laxmikant Chaware, V.B. Kamble, Lokesh Kumar Gupta, Raj Bali, Anirban Saha, Pradip Mukherjee, V. Vinu, K.P. Harikrishnan, Swetamber Das, P.P. Divakaran, A. Kakodkar, N.K. Chakradhari, S.K. Sahu, A.A. Usmani, N.D. Vagshette, N. Wadnerkar, M. Kissler-Patig, D. Altamirano, T. Belloni, Tamal Sarkar, Swarnadeep Biswas, N. Bhatt, S. Bhattacharyya, A. Pati, B. Paul, Chetana Jain, S.N.A. Jaaffrey, A.R. Rao, U. Das, A. Gupta, A. Dey, M. Bhattacharya, A. Bharati, P. Kayal, S. Molla, G. Anchalia, I. Paul, Nigel Weiss, S. Vadawale, Vivek Agrawal, Varsha Chitnis, Samridhi Kulkarni, A.K. Saxena, Gour Bhattacharya, Saibal Ray, Partha Pratim Ghosh, Sukanta Deb, B.G. Anandarao, Kanti Jotania, S. R. Kulkarni, Y. Hatwalne, T.P. Prabhu, B.C. Paul, D. Pawar, M. Vivek, Moti Ram Dugair, Ravi Yadav, Hemlata, Sapna Sharma, Vishal Shukla, A.K. Pandey, Bhaskar Agarwal, Nidhi Joshi, B.K. Kumthekar, Suresh Chandra, Ajith Parameswaran, B.B. Sanwal, Suresh Tapde, M. Gopinathan, K. Sriram, Anoop Srivastava, Marek Jamroz, Sami Dib, B. Ahmedov, D.C. Srivastava, Kartik Sheth, Joe Jacob, P. Vivekananda Rao, Ashutosh Kotwal, Amit Bhaduri, S. Sridhar, Y. Okada, Sunny Rajan.

About 35 people from various countries attended the SALT meetings during November 4-7.

Solution to For the Younger Minds - 26

The reason has to do with the way ${}^7\text{Be}$ transforms to ${}^7\text{Li}$ through radioactivity. This occurs through the process known as K-capture, in which an electron from the inner most K-shell is captured by the nuclei. At the temperature of a few thousand degrees, the thermal energy is comparable with the ionization energy of inner most electrons of the Be atom, arising from the tail of the Maxwell distribution. Since some fraction of Be atom will get ionized at these temperatures, the probability of nuclear electron capture decreases by the same percentage. This affects the radioactivity and hence, the half life.

Note: We conclude this column "For The Younger Minds" with this issue.
(T. Padmanabhan)

Know Thy Trees-11

Arvind Gupta and
Arvind Paranjpye

Tabebuia Pentaphylla

Half a dozen tall, stately *Tabebuia Pentaphylla* trees stand next to the Nalanda guest house wall in IUCAA. During February - March, the trees are lush with gentle mauve blossoms. Hidden amongst green leaves the flowers look exquisite against the magnificent blue sky. The tree draws attention because of its profuse flowering and the falling blooms make a dense carpet below.

This gorgeous tree is also known as Pink *Tabebuia*, Pink *Tecoma*, Pink Trumpet, Pink Poui and Rosy Trumpet-tree.

Tabebuia is a large genus belonging to the family Bignoniaceae. *Tabebuia* trees are widely planted as ornamental trees in the tropics for landscaping gardens, public squares and boulevards due to their impressive and colourful flowers. Many flowers appear on still leafless stems, making the floral display more conspicuous. They are useful as honey plants for bees, and are popular with certain humming birds. Apart from their spectacular visual appeal, *Tabebuia* trees do not contribute much to the ecosystem. They don't bear edible fruits and so birds don't flock to them.

These Latin American exotics were introduced in India in the late 1800's by the British. Bangalore holds the distinction of harboring the largest number of *Tabebuia* varieties in India.

Green finger: N. Kameshwar; R. Cowsik; W.C. Saslaw; G. Swaroop; B.V. Sreekantan.



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We welcome your responses at the following address:
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/>