

Proposal for a Centralized Astronomy and Astrophysics Facility for the Universities: An Endeavour by IUCAA, Pune, India

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Abstract. In spite of rising costs and fiscal restraints, the IUCAA in Pune, India has been investigating ways to improve its library services. One significant improvement, has been due to their instrumental role in helping to develop a consortia. This paper discusses the many challenges and rewards IUAA encountered in the process of uniting India's private, autonomous institutions with other university research facilities.

The present is one of information technology or popularly called "IT". The IT revolution has impacted all walks of life and the library is no exception. There is more information being generated and more tools for channeling and managing the information.

The information is generated by authors, researchers, teachers who produce and record the information and readers who receive it. There is also a host of other intermediaries such as publishing houses, learned societies, booksellers and libraries.

Libraries provide a permanent archive of scientific achievement and a guaranteed source of access to their records. In addition, the libraries and information centres organize and manage the scientific literature by means of cataloguing, classification, indexing and related procedures. Archiving, Arranging and Access are the three 'A's' of librarianship.

Challenges to the traditional scholarly publication process include:

- Soaring cost of publications.
- Increasing number and diversity of journals / monographs.
- Number and variety of information users.
- Geographical dispersion of users.
- Growing funding constraints on universities and their libraries.
- Copyright issues by scholars and institutions.
- Time and expense involved in a print based system.

Over the last decade, all aspects of computer technology (processing techniques, storage media and input/output devices) have become faster, more compact, sophisticated and less expensive. Accompanying these technological advances have been developments in telecommunications, transmission media, switching technology and terminal equipment.

After India attained its independence in the year 1947, there were around 22 universities in existence and science and technology received a great thrust. As a result, several scientific institutes, in both private and government sectors, were begun. Each institution had its own laboratory and funding for research.

Significantly, these developments in the post independence era took place outside the university sector. The universities, on the other hand, had limited funds, that were not sufficient for maintaining the resources or equipment required for serious scientific endeavors. In addition, the autonomous research institutes suffered because the scientists had little contact with the undergraduate population, and it was difficult to attract students for their in-house doctoral programs.

The University Grants Commission, the major funding agency for the university sector in India, felt the need to increase collaboration between the autonomous institutes and universities. Thus, under the purview of the commission, they developed a plan for scientific collaboration.

The autonomous institutes that are Inter-University Centres are:

| S.No. | Name of the Inter-University Centre | Area of specialization |
|-------|--|--|
| 1 | Nuclear Science Centre, New Delhi | Accelerator oriented research. |
| 2 | IUC for Astronomy and Astrophysics, Pune | State of the art facility for research in astronomy and astrophysics. |
| 3 | Inter-University Consortium for Department of Atomic Energy facilities, Indore | Use of the facilities of the Department of Atomic Energy. |
| 4 | Information and Library Network (INFLIBNET), Ahmedabad | Networking of libraries through electronic media |
| 5 | Consortium for Educational Communication, New Delhi | To disseminate nationwide programs through television. |
| 6 | National Assessment and Accreditation Council, Bangalore | To assess and accredit public and private institutions of higher learning. |

I will be restricting my talk to the role of the Inter-University Centre for Astronomy and Astrophysics located in Pune, India. IUCAA was founded on December 29, 1988. The idea was to provide advanced centralized facilities for subjects not adequately covered in the university departments and colleges. IUCAA was the second such centre to be set up, and its mandate is to provide coverage in the areas of astronomy and astrophysics. To facilitate usage of its facilities by university academics, IUCAA has funds earmarked for its associate program. Under this program, university faculty members intending to work in astronomy and astrophysics, with the help of IUCAA faculty, are elected associates of IUCAA. The associates can travel to Pune and stay on the campus for several weeks while conducting their research. In addition, IUCAA also offers the Summer School Program for Science graduates and Vacation Students Program for post graduates. On completion of this month long course, eligible students can opt for pursuing their doctoral programs in astronomy and astro-

physics at IUCAA.

The IUCAA library caters to the needs of the in-house faculty and students as well as to visitors coming to IUCAA from all parts of India. The library remains open year round from nine in the morning until twelve midnight. The IUCAA library subscribes to approximately 100 journals in the fields of astronomy, astrophysics and physics. The table shows the journal subscription expenditure from 1997 through 2001. The inflation of the rupee against the foreign currencies is also indicated.

| Subscription Year | Expenditure on periodical subscription in lacs | US Dollars (1USD = Rs. 50.00) |
|-------------------|--|----------------------------------|
| 1997 | 38 lacs | 76,000.00 |
| 1998 | 45 lacs | 90,000.00 |
| 1999 | 49 lacs | 98,000.00 |
| 2000 | 54 lacs | 108,000.00 |
| 2001 | 58 lacs | 116,000.00 |

Inflation of Rupee against Foreign Currency

| Year | Rupee per US Dollars | Rupee per UK Pounds | Rupee per NLG | Rupee per French Franc |
|------|----------------------|---------------------|---------------|------------------------|
| 1997 | 36.60 | 59.30 | 20.76 | 6.50 |
| 1998 | 43.30 | 72.50 | 18.80 | 7.80 |
| 1999 | 44.70 | 72.10 | 23.30 | 7.30 |
| 2000 | 46.00 | 71.00 | 21.70 | 7.00 |
| 2001 | 48.07 | 71.22 | 20.05 | 6.74 |

However, an associateship program restricts the number of academics who can avail themselves of the above facility. This led to the creation of an IUCAA Reference Centre that would cater to the needs of local academics. There are four IUCAA Reference Centres:

1. IRC, Darjeeling
2. IRC, Raipur, Madhya Pradesh
3. IRC, Delhi
4. IRC, Cochin

In 2000, the IUCAA library sent an enquiry to the American Institute of Physics in order to discuss the possibility of extending online access to the IUCAA Reference Centres for those journal subscriptions already acquired by the IUCAA library. During discussions with the publisher, the main issue was the fact that the centres did not have an IP address; thus, the publisher agreed to extend online access to each IRC through a username and password. The journals published by the American Physical Society, as well as MAIK-Nauka, were included and now researchers could obtain online access to a total of eleven journals:

AIP TITLES

1. Computing in Science and Engineering
2. Journal of Mathematical Physics
3. Review of Scientific Instruments

MAIK TITLES

1. Astronomy Combination (Astronomy Letters and Astronomy Reports)
2. Doklady Physics
3. Journal of Experimental and Theoretical Physics
4. JETP -Letters

APS TITLES

1. Physical Review D
2. Physical Review Letters
3. Reviews of Modern Physics
4. PROLA (Physical Review Online Archive)

This facility is being actively used by the university community.

In August 2001, the library initiated discussion regarding the possibility of obtaining subscriptions through a university consortia. This proposal was put forth for the consideration to the Chairman, University Grants Commission.

The universities in India are comprised of the following categories:

| Name of the State | Total Univ. | Central Univ. | Regular Univ. | Deemed Univ. | Agricultural University | Open Univ. | Institute of National Importance |
|-------------------|-------------|---------------|---------------|--------------|-------------------------|------------|----------------------------------|
| Andhra Pradesh | 20 | 1 | 11 | 1 | 1 | 1 | 5 |
| Arunachal Pradesh | 1 | | 1 | | | | |
| Assam | 6 | 2 | 2 | | | 1 | 1 |
| Bihar | 17 | | 11 | | 2 | 1 | 3 |
| Chandigarh | 2 | | 1 | | | | 1 |
| Delhi | 11 | 4 | 1 | 2 | 1 | | 4 |
| Goa | 1 | | 1 | | | | |
| Gujarat | 11 | 1 | 7 | 1 | 1 | 1 | |
| Haryana | 5 | | 3 | | 1 | | 1 |
| Himachal Pradesh | | | | | | | |
| Jammu and Kashmir | 3 | | 2 | | 1 | | |
| Karnataka | 16 | | 7 | 1 | 2 | 1 | 5 |
| Kerala | 8 | | 6 | | | 1 | 1 |
| Madhya Pradesh | 17 | | 10 | | 2 | 1 | 4 |
| Maharashtra | 27 | | 9 | 4 | 4 | 1 | 9 |
| Manipur | 2 | | 1 | | 1 | | |
| Meghalaya | 1 | 1 | | | | | |
| Nagaland | 1 | 1 | | | | | |
| Orissa | 5 | | 3 | | 1 | | 1 |
| Pondicherry | 1 | 1 | | | | | |
| Punjab | 6 | | 2 | | 1 | | 3 |
| Rajasthan | 10 | | 5 | 2 | 1 | 1 | 1 |
| Sikkim | 1 | | | | | | 1 |
| Tamil Nadu | 22 | | 11 | 3 | 1 | | 7 |
| Tripura | 1 | | 1 | | | | |
| Uttar Pradesh | 28 | 4 | 14 | 4 | 3 | | 3 |
| West Bengal | 14 | 1 | 8 | | 1 | 1 | 3 |
| TOTAL | 237 | 16 | 117 | 18 | 26 | 8 | 52 |

The IUCAA library undertook a survey as to the status of nine university libraries in Maharashtra State. It was observed that the core journals in astronomy and astrophysics were not subscribed to by almost all of their libraries. As a possible solution to this difficulty, the IUCAA library has initiated discussion with the American Institute of Physics and the University of Chicago Press regarding the possibility of obtaining online access to the journals subscribed to by the IUCAA library.

| S.No | Name of the University | Budget per year (in lacs) | Amount in US Dollars (1USD = Rs. 50.00) |
|------|---|---------------------------|---|
| 1 | Amravati University | 5 | 10,000 |
| 2 | Dr. Babasaheb Ambedkar Marathwada University | 77 | 157,142 |
| 3 | Dr. Babasaheb Ambedkar Technological University | 12 | 25,000 |
| 4 | University of Mumbai | 180 | 368,000 |
| 5 | North Maharashtra University | | |
| 6 | Shivaji University | | |
| 7 | Pune University | 71 | 145,000 |
| 8 | Nagpur University | 53 | 108,000 |
| 9 | Swami Ramananda Teerth Marathwada University | 3 | 6,123 |

Based on the outcome of this proposal for the nine universities, this facility can be extended to include university libraries in the other states. In this way, IUCAA is playing a significant role in supporting research and development activity at the university level.

References:

1. Association of Indian Universities: Universities Handbook. 28th ed., 2000. Association of Indian Universities, New Delhi.
2. Project Report of Inter-University Centre for Astronomy and Astrophysics (IUCAA), July 1988
3. Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune. (<http://www.iucaa.ernet.in>)