Chennai Mathematical Institute

Contact Address
Chennai Mathematical Institute
92 G. N. Chetty Road
T. Nagar, Chennai 600 017
India.
Phone: (044) 828 4232, 820 3854
Fax: (044) 825 0573
E-mail: office@smi.ernet.in
WWW: http://www.smi.ernet.in

The Governing Council of Chennai Mathematical Institute

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   Tata Institute of Fundamental Research, Mumbai
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7. Prof. C.S. Seshadri
   Director, Chennai Mathematical Institute, Chennai
8. Prof. P.S. Thiagarajan
   Chennai Mathematical Institute, Chennai
9. Prof. S.R.S. Varadhan
   Courant Institute of Mathematical Sciences, New York University, New York, U.S.A.

The Research Advisory Committee of Chennai Mathematical Institute

1. Prof. R. Balasubramanian
   Director, Institute of Mathematical Sciences, Chennai
2. Prof. David Mumford
   Brown University, Providence, R.I., U.S.A.
3. Prof. M. S. Narasimhan
   The Abdus Salam International Center for Theoretical Physics, Trieste, Italy
4. Prof. M.S. Raghunathan
   Tata Institute of Fundamental Research, Mumbai
   Chairman, National Board for Higher Mathematics
5. Prof. S. R. S. Varadhan
   Courant Institute of Mathematical Sciences, New York University, New York, U.S.A.
6. Prof. M. Vidyasagar
   Executive Vice-President, Tata Consultancy Services, Hyderabad

Chennai Mathematical Institute

Background

The Chennai Mathematical Institute is unique in India. It is a private science institution that combines high quality basic research with undergraduate teaching.

Its origins go back to 1989 when Southern Petrochemical Industries Corporation Ltd. (SPIC) set up a School of Mathematics as a part of the SPIC Science Foundation with the aim of nurturing excellence in the Mathematical Sciences. In 1996, the School of Mathematics became an independent institution under the name SPIC Mathematical Institute. In 1999, to place the institute in a larger public domain, the name was changed to Chennai Mathematical Institute (CMI).

CMI is set up under a Trust and is managed by a Governing Council made up of eminent personalities from both academic and non-academic backgrounds. There is also a Research Advisory Committee consisting of highly respected scientists such as Professors David Mumford, who has been awarded the Fields Medal, S.R.S. Varadhan, who has been a Director of the Courant Institute of Mathematical Sciences, New York University, U.S.A. and M.S. Narasimhan, formerly Director, Mathematics Section, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy.

Goals

The goal of CMI is to build an institution which combines excellence in research and teaching in mathematical sciences. At present CMI's focus is in Mathematics and Computer Science. The long term goal is to provide a nucleus around which a first rate university can grow naturally.

Undergraduate education is one of the weakest aspects in the Indian educational system. The national research institutions have not in general, concerned themselves with undergraduate education, as traditionally this was done at the colleges and universities. Consequently, the wealth of scholarship and teaching talent available at the national institutes does not interact with the young minds at the undergraduate level. On the other hand the universities have not, in general, attained international standards. No effort has been made to build great universities like Cambridge, Harvard, Princeton etc. which combine excellence in research and teaching. The long term goal of CMI is to evolve into such an institution.

Academic profile

Over the past decade CMI has established itself as one of the best places in India for the pursuit of research in Mathematics and Computer Science. It has a very good faculty, a well-established Ph.D. programme (nine persons have already taken their Ph.D.) and interaction with reputed academic institutions in India and abroad. There are now around ten members on the faculty, a few Post-Doctoral Fellows and around half a dozen Ph.D. students. There is also a regular stream of visitors to the Institute.

Prof. C.S. Seshadri, who has headed CMI since its inception, is a renowned mathematician. He has received many awards in recognition of his achievements and he is a Fellow of the Royal Society (U.K.). Prof. P.S. Thiagarajan, who has been at the Institute from the beginning, is a highly reputed Computer Scientist. Prof. R. Sridharan, a mathematician of repute and formerly Dean, School of Mathematics, TIFR is now at CMI. Prof. Parimala Raman, a well-known algebraist who is at present Dean, School of Mathematics, Tata Institute of Fundamental Research, Mumbai (TIFR) is likely to join CMI soon. Prof. S. Ramanan, a well-known differential and algebraic geometer from TIFR, is closely associated with CMI.

Teaching Programme

CMI started a National Undergraduate Programme (NUP) in 1998. It consists of a 3-year integrated course in Mathematics and Computer Science leading to a B.Sc. (Honours) Degree. Under this programme a selected group of talented students are given intensive training in the broad spectrum of mathematical sciences by active researchers, preparing them for academic and professional courses requiring mathematical and computational skills[1]. Persons with such skills have now far better career possibilities than ever before, not only in traditional areas of science and engineering, but also in the financial and software sectors. From 2001, an M.Sc. component will be added to the teaching programme at CMI.

The degrees for the teaching programme will be awarded by the Madhya Pradesh Bhoj (Open) University, Bhopal.

The teaching programme has been favourably received by many reputed institutions. CMI has entered into a Memorandum of Understanding with the Ecole Normale Supérieure (ENS), France for the exchange of students and teachers. Under this agreement, three members from ENS visited and taught courses in the Fall semester of 2000 and two undergraduate students of the CMI are visiting ENS, Paris during the summer of 2001. The Institute of Mathematical Sciences, Chennai (IMSc), has been consistently encouraging its Faculty to participate in the programme. A similar agreement has been worked out with the School of Mathematics at TIFR, Mumbai. With the support of these institutions, there is a large pool of highly-qualified and talented academicians available for the teaching programme.

Applications of Mathematics

CMI is also interested in initiating activities in applications of mathematics like financial mathematics, cryptography etc. There are many such areas which involve high level mathematics and require persons well-trained in mathematical skills.

Funding

Initially, practically all the funding for the Institute had come from SPIC. From the year 2000 onwards the Institute has been receiving a fairly large annual grant from the Department of Atomic Energy (DAE). The Institute also receives smaller grants from the Indian Space Research Organisation (ISRO) and the Department of Science and Technology (DST).

Though SPIC has been the main source of funding for the Institute, it has always been understood that the Institute would eventually move away from relying on SPIC for its

[1] The first batch of undergraduate students will pass out this year and in fact some of them have already been offered admissions for postgraduate studies in leading universities in the U.S.

finances and develop instead an independent, sustainable funding structure. For this, the Institute needs to build a substantial Corpus Fund and a small beginning has been made in this direction.

Moreover, the activities of CMI have expanded tremendously, especially in view of the teaching programme. To sustain these activities and to move towards the long term goals, there is a need to recruit more mathematicians, computer scientists and specialists in other related sciences such as physics, economics etc. The Institute is at present housed in a part of a rented commercial building. It needs a campus of its own, consisting of lecture halls, library, office rooms, cabins for students, administrative offices, dormitory facilities etc. These require a substantial increase in the level of funding for the Institute.

Target

In the short term, a sum of Rs. 10 crores (US$ 2 million) would meet the needs of the Institute.

Avenues for funding

There are several ways in which funds can be provided to target specific needs. For example,

- Chairs can be created in specific disciplines.
- Funds may be provided for building activity.

  For example, funds may be earmarked specifically for a library building, lecture rooms and cabins for students, dormitory accommodation for students and so on.
- Direct contributions may be made towards building up the corpus.

Tax exemptions

CMI has been granted tax exemption u/s 35 1(ii) and 80G of the Income Tax Act, 1961.

In the United States, the Foundation for the Advancement of Arts and Sciences from India, Inc. (ARSI), 150-56 Melbourne Avenue, Flushing, New York, 11367, USA, has indicated a willingness to collect funds on behalf of the Institute. ARSI is a tax-exempt organisation in the US, incorporated in the state of New York. A person in the US making an earmarked donation to ARSI will be able to claim tax exemption in the US allowable to the extent permitted by the federal and state laws.

Brief summary

CMI has already made a significant beginning as an institution devoted to excellence in research and teaching in Mathematics and Computer Science. The university system in India desperately needs fresh models. Private initiatives are vital for this. The institutional structure at CMI readily admits active private initiatives and innovations. With proper funding, CMI can be built up to provide a nucleus around which a first rate university can grow naturally.

Private donations received:
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Shriram Group of Companies	Rs.10 lakhs
Infosys	Rs.5 lakhs
Stroock Foundation 180 Maiden Lane New York, NY 10038-4982	US $ 50,000
A well wisher, U.S.A.	US $ 35,000
Prof. Ravi Kulkarni (through ARSI)	US $ 750
Prof. Akhil and Nilima Kumar U.S.A.	US $ 250

Prof. Ravi Kulkarni is responsible in setting up a tax-exempt organisation in the U.S. called ARSI (the Foundation for the Advancement of Arts and Sciences from India, Inc., 150-56 Melbourne Avenue, Flushing, New York, 11367, USA) through which earmarked donations could be sent to CMI.