Pakistan Mathematical Society

Newsletter

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Editorial

Through this regular newsletter, information on the activities of the Pakistan Mathematical Society and its members, as well as other matters which are of interest to members, are made known. The newsletter is an important tool whereby regular information on mathematical seminars, workshops, lectures, conferences, and other such activities concerning mathematics in Pakistan and abroad are disseminated to members.

The newsletter not only helps members of the society to keep in touch and contact with each other, but it also promotes dialogue and debate on issues and government policies that directly or indirectly affects mathematics, particularly mathematics learning, teaching and research.

Each newsletter surveys the mathematical events and activities of the past quarter and attempts to look forward to the events and issues which the Pakistan Mathematical Society and its members face.

The editorial board of the newsletter invites members and other readers to send information regarding any mathematical activity in their schools, colleges or universities which had taken place recently or which will take place in the near future. Members are also invited to send in articles (not more than … words) on topics which might be of interest to readers of this newsletter or their comments on articles or issues which appeared in previous issues of the newsletter.

7th INTERNATIONAL PURE MATHEMATICS CONFERENCE 2006

Rationale

The uplift of our economy requires that we pay due attention to science and technology. For development in science, a sound mathematical foundation is a pre-requisite. Therefore, it is imperative that we develop an adequate mathematical culture in Pakistan. The Pure Mathematics Conference is an important step in this direction. It adds to improvement in the quality of research in mathematics and exposes young mathematicians to mathematics at the highest level.

Research is a global activity. Our researchers do not get sufficient opportunities on a regular basis whereby they can interact with researchers from mathematically developed countries. Thus they work virtually in isolation. By and large their research, therefore, remains out of stream. Realizing these needs, the Pakistan Mathematical Society has committed itself to organize international conferences regularly every year. It has thus organized the series of 1st, 2nd, 3rd, 4th, 5th and 6th Pure Mathematics Conferences in 2000, 2001, 2002, 2003, 2004 and 2005 respectively. The 7th International Pure Mathematics Conference 2006 was a sequel to these conferences. It also served the purpose of introducing Pakistani culture and society to the foreign delegates for improving better relationship between Pakistani mathematicians and their counterparts in other countries.

Background

Topical and thematic conferences are held frequently all over the world. Conferences on "mathematics" are supposed to be huge conferences, which rarely take place, and in these 20 to 30 research papers are read in each branch of mathematics. Expenditure on these conferences makes sense only when there are adequate numbers of audience in each branch who can understand the relevant seminar.

We have set the trend in Pakistan for holding a thematic conference of an international standard regularly in Islamabad, every year in August. So far seven conferences have been held.

The 7th International Pure Mathematics Conference was a thematic conference covering three main branches of mathematics, namely Algebra, Geometry, and Analysis. It was held from 5 to 7 August

2006. It had the privilege of having 6 keynote speakers, 18 speakers from outside Pakistan, 26 speakers from within Pakistan, and 171 participants. There were 16 foreign guests from 6 countries. They were: Dr. G.M.Angizan (Iran), Dr. S.K.Banerjee (India), Mr. A.Bhardwaj (India), Mr. J.Collera (Philipines), Prof. B. K. Dass (India), Prof. M.M.Deza (France), Dr. H.Farea (Yemen), Dr. MD A. Hussain (India), Prof. P. K. Jain (India), Dr. S.M. Khairnar (India), Mr. M.J.Khilji (India), Dr. I. Nurov (Tajikstan), Dr. W. Saeed (Yemen), Prof. A.W. Vyawahare (India), Dr. S.K.Bhambri (India),

The Pakistan Mathematical Society, Quaid-i-Azam University, Higher Education Commission, and the Pakistan Science Foundation were supporting the conference. The conference was given international publicity. It was advertised through the PMC Website http://www.pmc.org.pk HEC has published information of the conference in its newsletter and displayed in its website the conference poster. The homepage of Quaid-i-Azam University, Islamabad, has also advertised the conference. In addition, the American Mathematical Society, the London Mathematical Society, and the Southeast Asian Mathematical Society have also published information about the conference in their newsletters and websites.

These conferences have provided a novel opportunity for researchers to meet and share their work. Many Ph.D. and M.Phil. students also attended the conference in order to update themselves to a level that is required to do original and better research.

The speakers consisted of experienced and reputable mathematicians working both outside and within the country. These conferences also provided an opportunity to develop collaboration in research between various mathematicians from different institutions and mathematical areas.

Inaugural Session

A simple one-hour inaugural session was arranged on the first day of the 7th International Pure Mathematics Conference. Some 160 invited guests attended the inaugural session. was short. Dr Akram Sheikh, Deputy Chairman, Planning Commission of Pakistan, was the chief guest.

The inaugural session was kept very simple and sombre. Professor B.A.Saleemi, President, Pakistan Mathematical Society, the Convener, Professor Dr Qaiser Mushtaq, and the Chief Guest delivered straightforward and short speeches.

Proceedings

The 7th International Pure Mathematics Conference 2006 was thematic. Its theme was Algebra, Analysis, and Geometry. It was a rewarding experience to have so many eminent mathematicians in Pakistan. Sixteen well known mathematicians from 6 countries, including France, India, Iran, Tajikstan, the Philipines, and Yemen attended the conference. It was an outcome of the collective efforts of the following committees:

Committees

Professor Dr Qaiser Mushtaq
Convener 7th IPMC 2006

Professor of Mathematics
Quaid-i-Azam University, Islamabad, Pakistan, &

Full Honorary Professor
Mathematics Division
Institute of Basic Research
Palm Beach, Florida, USA

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Professor Dr Qaiser Mushtaq (Chairman)
Mr Muhammad Sarwar Saeed
Dr Khalid Saifullah
Dr Muhammad Shabir
Mr Nasir Siddiqi

The proceedings of the conference spread over three days. The first day there was inaugural session, Registration, two keynote lectures, and two parallel sessions each comprising five lectures. In the evening, from about 5.10 to 8.00, there was sight seeing tour. The second day there were three key note lectures and two parallel sessions each comprising eleven lectures. In the evening, from 5.10 to 8.00, there

was again a sight seeing tour. The second day, there was Conference Dinner at the Hotel Margala. On the third day, there were two key note lectures and two parallel sessions each comprising nine lectures. Every day there were two servings of tea and a lunch.

The guests were shown Faisal Mosque, Quaid-i-Azam University, Rawal Dam, Shakar Parian, Constitution Avenue, and Folk Heritage Museum. Speakers were served dinners at Holiday Inn and Pearl Continental.

The registration fee for foreigners was US $ 50, Rs 500 for students, and Rs 1000 for the rest. Consequently Rs 123,360.00 were collected as registration fee.

Concluding Session

The last session was devoted to the discussion on the state of mathematics in Pakistan. Professor B.A.Saleemi, Professor M.M.Deza, and Professor Q.Mushtaq appreciated the quality of the papers read at the conference. They expressed their thanks also for the warm hospitality. They were of the view that this useful activity has introduced Pakistan very well to the global mathematical community. Further, it was unanimously resolved that there is a dire need to uplift mathematics in Pakistan. The research, teaching, and curriculum of mathematics need to be improved and the government needs to be urged to take serious note of the state of mathematics. In the end, it was decided that the 8^{th} International Pure Mathematics Conference 2007 would be held in Islamabad in August 2008.

Publications

The conference published Poster, Website, Invitation Cards, Certificates, Booklet containing Abstracts of the papers, and Proceedings of the Conference.

The participants were given soft brief cases containing a ballpoint pen, ten leaves of white paper, and a booklet containing abstracts, brochure, and a copy of the programme. twenty souvenirs were given to the invited speakers.

National participants were provided free accommodation at the Dreamland Hotel and at the Royal Inn, and the foreign invited speakers were put up at the Hotel Margala.

Advertisement

The conference was given international publicity. A colourful poster was sent to the Vice Chancellors and Registrars of all the universities in Pakistan. Invitation cards were also sent to the members of the Pakistan Mathematical Society and prominent scientists for participation. The conference was advertised through the Conference's own Website http://www.pmc.org.pk HEC published information of the conference in its newsletter and displayed in its website the conference poster along with web connection. The Homepage of Quaid-i-Azam University, Islamabad, advertised the conference and displayed web connection. The American Mathematical Society and the London Mathematical Society published information about the conference in its Notices, and The Newsletter. The Southeast Asian Mathematical Society also publicised the conference on its website.

The conference was given due coverage in the media. Several news items appeared in the national newspapers, namely Dawn (6th August 2006) and The News (6th August 2006), Pakistan Television also covered the event and it was shown on PTV Khabarnama.

Acknowledgements

The conference would not have been so successful without the support of the Pakistan Mathematical Society, Higher Education Commission, and the Pakistan Science Foundation.

The conference would not have been possible without the active role played by Professor Dr M.Sarwar Kamran, Mrs Farha Diba, Major Dr M. Ashiq, Dr. M.Aslam, Major Dr T.Maqsood, Mr. Sohail Iqbal, Miss Shehla Asif, Miss Saima Anis,Mr. M. Imran, Mr Iftikhar Ali, Dr Nazir Zafar, Mr Madad Khan and Mr. M. Sarwar Saeed.

The President and the General Secretary of the Pakistan Mathematical Society, namely Professor B.A.Saleemi and Mr Rauf Malik for their support.

Thanks are also due to the International Advisory Committee and the National Advisory Committee for their guidance and advices.

IMPACT FACTOR AND TENURE TRACK SYSTEM AT QAU

Recently, Quaid-i-Azam University adopted the Tenure Track System evolved by the Higher Education Commission. The system heavily depends upon the use of impact factor. For instance only those research papers will be counted for which have a non-zero impact

factor according to the Institute of Scientific Information, Philadelphia, USA. The list containing only a small number of mathematical journals selected by a private company, namely Thompson and Thompson, is the one, which is propagated by the Institute. It is irony that the list of mathematical journals produced by the American Mathematical Society and which is available on the MathSciNet is not acceptable to the University or the Higher Education Commission. This list contains almost seven times more journals with non-zero impact factors that the one used by the Higher Education Commission. Although the formula is adversely affecting both applied and pure mathematicians but it is damaging pure mathematics more.

At Quaid-i-Azam Uiversity, only two applicants, namely Professor Dr Qaiser Mushtaq and Professor Dr Muhammad Ayub have qualified for the posts of Professors. For the posts of Associate Professors, Dr Naseer Ahmad and Dr Tasawar Hayat have qualified. Dr Muhammad Aslam and Dr Tariq Shah have qualified for the posts of Assistant Professors. The criteria is clearly favourable to the applied mathematicians.

THE TRUE NATURE OF MATHEMATICS

Mathematics by its nature is essentially abstract. The objects of mathematics are abstractions; we must therefore require knowledge about them by logic and not by observation. Another important aspect of axiomatic mathematics is this: when we capture mathematical facts in an axiomatic system, we never try to reproduce the facts in full, but only that side of them which is important and relevant in a particular context. This process of selecting what is relevant and disregarding everything else is the very essence of abstraction. For natural scientists, this process is the very core and essence of they do. Nature is not made up of forces, velocities, and moments of inertia. Nature is a whole. The physicist isolates certain aspects of nature from the rest and finds the laws which govern these abstractions. Mathematicians study structure independently of content, and their science is a voyage of exploration through all the kinds of structure and order which the human mind is capable of discerning.

ABEL PRIZE

The first eager proponent of establishing an Abel Prize was the mathematician Sophus Lie, Norway's other world-renowned mathematician. Before his death in 1899, one of the last things he used his international prestige for was to gather support for establishing a fund that would award an Abel Prize every five years for outstanding

work in pure mathematics. Lie's effort was, by all accounts, inspired by the ongoing collection for the Nansen Fund and certainly by the fact that Alfred Nobel's plans for annual prizes, made known in 1897, lacked a prize in mathematics.

Although the support from the leading centres of mathematics in Europe was over-whelming, the contacts and promises for support were tied too much to Sophus Lie personally. Therefore, when he died, the effort died too. Not until the centenary celebration in 1902 did King Oscar II become interested in a prize in Abel's honour. In close association with the Science Society of Christiania, today the Norwegian Academy of Science and Letters, the mathematicians Carl Størmer and Ludvig Sylow drew up statutes and rules for this prize.

However, the dissolution of the union between Sweden and Norway in 1905 put an end to any further plans. Fridtjof Nansen, the polar explorer, regretted that even with contributions from mathematics circles abroad, it was financially impossible for Norway to establish an Abel fund on its own. In a letter in 1906 to the mathematician Elling Holst he added: "The Abel Prize promised by blessed King Oscar went to heaven with the Union."

On the occasion of the centenary of his death in 1929, Abel was commemorated on Norwegian stamps, the first non-royal after Henrik Ibsen to be so honoured. In 1948, Norges Bank printed Abel's portrait on the obverse of the 500-krone banknote. And Abel's memory was kept alive in subsequent banknote and stamp issues. When the International Mathematical Union, with UNESCO support, designated 2000 as the "World Mathematical Year", Abel was Norway's leading logo. Abel's international position and his life and work were also at the heart of the efforts leading up to the bicentenary of Abel's birth. The objective of a number of national and international efforts aimed at the profession, schools and society at large was to create a broader appreciation for the importance of mathematics and science for today's society.

At a meeting in August 2000 between Abel's biographer Arild Stubhaug and the CEO of Telenor, Tormod Hermansen, events from a century earlier were discussed and the plans for a major international Abel Prize dusted off. Hermansen briefed the Ministry of Education, Research and Church Affairs about the idea, and Stubhaug brought the matter before the Department of Mathematics at the University of Oslo. After an invitation from Arne Bang Huseby, the academic head of department, and Yngvar Reichelt, the administrative head of department, Hermansen, along with his secretary, Kjell Stahl, attended a meeting at the Department of Mathematics in March 2001.

Here a working group was appointed, the Working Group for the Abel Prize, consisting of professors Jens Erik Fenstad, Arnfinn Laudal and Ragni Piene, administrative head of department Yngvar Reichelt, lecturer Nils Voje Johansen and the author Arild Stubhaug. From then on all parties involved worked intensely on the matter. Members of the Storting and key players in academic, business and cultural circles were briefed on the plans for an Abel Prize, and feedback was entirely positive. Declarations of support also came from major international mathematics organisations. On 23 May the Working Group for the Abel Prize sent the prime minister its proposal to establish an Abel Prize.

Then on 23 August 2001, during a speech on the Blindern campus of the University of Oslo, Prime Minister Jens Stoltenberg announced that the Government would establish an Abel Fund worth NOK 200 million. He emphasised the broad political consensus regarding the proposal and hoped that an annual Abel Prize would strengthen and inspire teaching as well as scientific efforts.

JEAN-PIERRE SERRE: THE FIRST ABEL LAUREATE

The first Abel Prize has been awarded to Jean-Pierre Serre, one of the great mathematicians of our time. Serre is an Emeritus Professor at the College de France in Paris. He has made profound contributions to the progress of mathematics for over half a century, and continues to do so.

Serre's work is of extraordinary breadth, depth and influence. He has played a key role in shaping the modern form of many parts of mathematics including topology, algebraic geometry and number theory. Serre developed revolutionary algebraic methods for studying topology, and in particular studied the transformations between spheres of higher dimensions. He is responsible for a spectacular clarification of the work of the Italian algebraic geometers by introducing and developing the right algebraic machinery for determining when their geometric construction worked. This powerful technique of Serre, with it new language and viewpoint, ushered in a golden age for algebraic geometry.

For the past four decades Serre's magnificent work and vision of number theory have been instrumental in bringing that subject to its glory. This work connects and extends in many ways the mathematical ideas introduced by Abel, in particular his proof of the impossibility of solving the 5^{th} degree equation by radicals, and his analytic techniques

for the study of polynomial equations in two variables. Serre's research had been vital in setting the stage for many of the most celebrated recent breakthroughs, including the proof of Wiles of Fermat's Last Theorem.

Although Serre's effort has been directed to more conceptual mathematics, his contributions have connection to important applications. The practical issues of finding efficient error-correcting codes and of public-key cryptography, both make use of solutions of polynomial equations (specifically over finite fields) and Serre's work has substantially deepened over understanding of this topic.

Jean-Pierre Serre was born in 1926 in Bages, France. He studied at the Ecole Normale Superieure and received his D.Sc. in 1951 from the Sorbornne in Paris. After holding a position through the Centre National de la Recherche Scientifique, he was an associate professor at the Universite de Nancy. In 1956 he assumed the position of professor at the College de France.

Serre has been made a Commander Legion d'Honneur and High Officer Ordre National du Merite. He has been elected to many national academies, in particular, the academies of France, Sweden, United States and the Netherlands. He was awarded the Fields Medal in 1954 (the youngest recipient ever), the Prix Gaston Julia in 1970, the Balzan Prize in 1985, the Steele Prize in 1985 and the Wolf Prize in 2000. He has been awarded honorary degrees from many universities, most recently from the University of Oslo in 2002 in connection with the Abel Bicentennial.