CONFERENCES ON MATHEMATICS

S&SE Asia Regional Meetings of the Econometric Society

December 28-30, 2002, LUMS Lahore, Pakistan

Siam Symposium on Computational Models and simulation for Inter-cellular Processes

October 4-5, 2002, Hilton Garden Hotel, Washington D.C, USA

December 17-20, 2003 Bangalore, India

First Joint International Meeting between the American Mathematical Society (AMS) and various Indian Mathematical Societies

SIAM Conferences on Discrete Mathematics

August 11-14, 2002, Handlery Hotel and Resort, San Diego, CA USA

June 12-16, 2002 Pisa, Italy

First Joint International Meeting between the American Mathematical Society and the Unione Matematica Italiana

June 18-21, 2003 Seville, Spain

First Joint International Meeting between the American Mathematical Society (AMS) and the Real Sociedad Matematica Espanola (RSME)

International Congress of Mathematics ICM 2002

August 20 – 28, Beijing, China
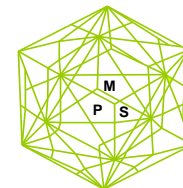
More Information about the ICM can be found at http://www.icm2002.org.cn/

● **Editor's Note**

● **Interview with Professor Qaiser Mushtaq**

●**3rd Pure Mathematics Conference 2002 by PMS**

● **Mathematics News**

Jobs
Conferences

Faculty Positions

LUMS is seeking full-time and visiting faculty at all levels in the following areas:

Computer Science

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Mathematics

Analysis, Algebra, Probability, Statistics, and Discrete & Applied Mathematics

LUMS offers a very attractive work environment including on-campus accommodation for faculty. Applicants should preferably have a Ph.D degree or be at an advanced stage of Ph.D candidacy. Individuals having a master's degree with strong academic credentials, or substantial professional experience, are also encouraged to apply. LUMS is an equal opportunity employer. Candidates should send applications with complete curriculum vitae to:

Faculty Recruitment

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Opposite Sector U,
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Pakistan
Tel: 92 42 572-2670/79
Fax: 92 42 572-259
E-mail: facultyjobs@lums.edu.pk

The International Mathematical Union (IMU) has just released Math-Net, a worldwide electronic information and communication system for mathematics departments and research institutes that offer their information on the Web. Math-Net has been designed to facilitate access to high quality mathematical information worldwide, both by human users and search engines. The Math-Net Page, a web portal for mathematics departments and institutes, enables presentation of information in a standardized, well structured, and easy-to-use format.

From the Unicode® Consortium news release, April 2, 2002: The Unicode Consortium announced today a new version of the Unicode Standard, Version 3.2, which includes the most extensive set of characters for mathematical and technical publishing yet defined. The Unicode Technical Committee and the Scientific and Technical Information exchange (STIX) Project of the Scientific and Technical Publishers (STIPub) Consortium worked together over the past 5 years to identify over 1,600 new mathematical symbols and alphanumeric characters, more than doubling the number of characters with mathematical usage previously available. Barbara Beeton, Composition Systems Staff Specialist at the American Mathematical Society, played a pivotal role in the project.

EDITOR'S NOTE

Here is the second issue of the PMS Newsletter. As a member and an officer of the PMS, I have mixed feeling about mathematical activity that has taken place in Pakistan since the last issue of this Newsletter.

On a positive end, the annual summer camp in Nathia Gali was held with full enthusiasm, and was attended by prominent mathematicians, Physicists, and other scientists. COMSATS Institute of Information Technology held a conference on computational mathematics in Islamabad on July 28th. This was a good sign for mathematics as the hosting of such conferences by major educational institutions like CIIT will make its importance clearer to the laymen, and will certainly benefit the mathematical community of Pakistan. More importantly, the 3rd Pure Math Conference 2002 (PMC) was held in Islamabad on August 9th-10th, 2002. It was a success in every sense. Many senior mathematicians attended and gave talks, and some interesting ideas on how to further develop mathematics in Pakistan and the PMS were discussed. Please refer to the news article about this conference in the News section.

On the negative end, I think there was not enough activity. I guess as a mathematician, I can always say this! Nonetheless, around the world mathematical activities occur at least once a month. Compared to that, we have a dismal record. And I must admit that PMS itself was unable to hold too many activities. The major reason for this was a lack of funding for such activities, which really cannot function without the proper funds.

In any case, PMS moves on. We are hopeful that the next quarter will be that of major math events under the banner of PMS. All new endeavors have to go through tough times, but patience always pays off. I thank you all for your support for PMS, and most of all for your patience. Thank you.

Faisal Shah Khan

MATHEMATICS NEWS

NSF Establishes Three New Mathematics Institutes

The National Science Foundation is establishing three new research institutes which will help strengthen the mathematical sciences. The institutes are the Mathematical Biosciences Institute at Ohio State University in Columbus; the Statistical and Applied Mathematical Science Institute in Research Triangle Park, NC; and the Research Conference Center of the American Institute of Mathematics in Palo Alto, CA.

The awards for the institutes are projected to total 24 million dollars over five years. An existing institute, the Institute for Advanced Study in Princeton, NJ, received an award of nine million dollars, which represents a six-year renewal. Contact at NSF, Christopher Stark at cstark@nsf.gov for more information

Five Mathematicians Elected Royal Society Fellows

Five mathematicians are among the newly elected Fellows of the Royal Society: **Terence John Lyons** (University of Oxford), **Eric Ronald Priest** (University of St Andrews), **Susan Mary Rees** (University of Liverpool), **Miles Anthony Reid** (University of Warwick), and **Peter Sarnak** (Courant Institute). See the complete Royal Society news release about the 2002 Fellows for their election citations.

The Royal Society is an independent academy promoting the natural and applied sciences. Founded in 1660, the Society has three roles, as the UK academy of science, as a learned Society, and as a funding agency. Its Fellows are elected for their outstanding contributions to science.

INTERVIEW WITH DR. Q. MUSHTAQ

Professor Qaiser Mushtaq is the chairman of the mathematics department at the Quaid-i-Azam University and the president of the Pakistan mathematical society. The following is an interview with him.

Q. What were the reasons behind your efforts to get a mathematical society established in Pakistan?

A. Mathematics in Pakistan is misunderstood. This misunderstanding does not only exist at the laymen's level, but at the academic and professional level as well. In Pakistan, math has been regarded as an additional subject during school and university in order to move on to careers in sciences or engineering. Again, if ordinary people think so that's relatively tolerable. However, this conception exists even at the government level in the minds of the policy makers of science and education. This sad situation just cannot be allowed to exist any longer. Mathematics is the fountain from which all sciences flow. This is a fact I tell you, not just a biased opinion of a mathematician. Look at the level of mathematics in any developed nation and you will see a positive direct relationship between science and technology development and the development of mathematics. Thus, in order to change the backward attitudes toward mathematics in Pakistan, I felt that a forum needs to be provided to the mathematical community in Pakistan that can be used to make the government policy makers as well as the general public appreciate the importance of math, thereby resulting in development of the subject in the country. Hence, the PMS.

Q. You say that mathematics is the "fountain from which all sciences flow." I am sure the readers would like to get a better understanding of this idea.

A. Certainly. If we look at the history of science and technology from the earliest civilizations to the modern day, this statement is verified. Ancient Egypt is a prime example. We glorify their pyramids as the hallmark of engineering. I wonder how many people in Pakistan understand the mathematics that went into the designing and construction of these monoliths. The structure of the pyramid itself is a mathematical object with aesthetic and mathematical properties to be appreciated. The building process involved the movement of huge blocks of rocks which required mathematical ideas as well. Ancient

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DHAHRAN, SAUDI ARABIA

College of Sciences
Prep-Year MATH Program

The College of Sciences at King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, is seeking candidates for the positions of Lecturers on Mathematics. Applicants will be expected to teach College Algebra to prep-year students and also to provide counseling to students regarding their academic problems.

Applicants should have M.A./M.Sc. in Mathematics from Western/Australian Universities. Preference will be given to those who have strong teaching experience in College Algebra or A-Level Mathematics.

Salary/Benefits: Two-year renewable contract. Competitive salaries based on qualifications and experience. Free furnished air-conditioned on-campus housing unit with free essential utilities and maintenance. The appointment includes the following benefits according to the University's policy: air ticket to Dammam on appointment; annual repatriation air tickets for up to four persons; assistance with local tuition fees for school-age dependent children; local transportation allowance; two months' paid summer leave; end-of-service gratuity. KFUPM campus has a range of facilities including a medical and dental clinic, an extensive library, computing, research and teaching laboratory facilities and a recreation center.

To apply: Mail, fax or e-mail cover letter and detailed resume to: Dean, Faculty & Personnel Affairs, KFUPM, DEPT. PYP/MATH-2200, Dhahran 31261, Saudi Arabia Fax: 966-3-860-2429 E-Mail: faculty@kfupm.edu.sa or mailto:c-math@kfupm.edu.sa.

Please visit our website: http://www.kfupm.edu.sa/.

Greeks used mathematics to study the forces of nature and design war machines. Archimedes, their most renowned mathematician is said to have used huge lenses to put enemy ships on fire. These ideas needed a sound understanding of mathematical concepts like direct and inverse relationships between natural forces, magnitudes etc. The Arab Muslim civilization was at its zenith when its philosophical attitudes were influenced and developed by logic, a branch of math. They contributed wonderful ideas to architecture and navigation by developing and using math. The European Renaissance can be easily contributed to awareness of the importance of math in philosophy and real life. Today, the Western world is ahead of the rest of the world (including Pakistan) because of their appreciation of the power of mathematics. They understand that to really quantify a science, the science needs to be "mathematized." So you can see that more and more sciences are getting mathematized. For example, genetic engineering uses knot theory, networking uses graph theory and topology, e-security requires number theory and algebra, etc. I think this should be enough to clarify what I meant!

Q. Indeed! So how has the PMS been doing so far?

A. Well, not as well as I would have liked it.

Q. Why not?

A. Many reasons for that. First of all, the culture of mathematics is not all that sophisticated in Pakistan. Math is not only a subject for development of science and technology, but also a philosophy. A philosophy always leads to a culture. The more sophisticated the culture, the better the philosophy prospers and benefits its followers. For one, the lack of this sophistication has hampered the Pakistani math community from really utilizing their collective potential. Issues end up being unnecessarily politicised. Also, many members of the math community lack a proper understanding of the purpose of a math society. There is certainly a majority that thinks that a society is there to act as a socializing forum through tea parties, prize distribution ceremonies, and even conferences. That is so unfortunate. Sure all these things get done in any gathering. But they are not the point. The point is to do something positive for mathematics in Pakistan. Then there are those who are cautious of the PMS because previous math societies that they had joined did not do much for them or math and went dead soon.

Q. Anything positive that has come through the PMS so far?

A. I think so. We have been able to hold two pure math conferences (PMC) under the banner of the PMS. We have made enough ripples that major players in the government and other institutions are paying some attention now. In the recent PMC, Dr. Hameed Ahmed Khan, executive director of COMSATS pledged his support for PMS in terms of hosting the 4th PMC next year. I think that this will also attract the attention of many other people in terms of realizing the importance of math. PMS is getting enough coverage in the press that when someone reads the newspaper, he can expect to see an article or two about math and PMS. This will hopefully create a better understanding of math among the masses.

Q. What support does the PMS and the math community in general has at the moment from the government?

A. Unfortunately, not much. I explained earlier why this is so. For the 3rd PMC, the Pakistan Science Foundation gave us only 15, 000 rupees! This amount is a joke for a national level conference. You see, the attitudes we discussed earlier need to change. History is witness to the fact that the Western Renaissance owes its conception and proliferation to math societies and institutes of Western countries of that time. Even in India, the pattern is the same, and the policy makers realize the importance of math. In Pakistan, many societies (including math) decay and die because they are initiated and run on the efforts of individuals. These individuals leave, and it's all over. I don't want the same to happen to the PMS. The government seriously needs to patronize the PMS.

Q. What is government doing for mathematics in Pakistan at the moment?

A. Not enough. Seems like I start off every sentence with a NOT! The government has been promoting this idea of "indigenisation." The idea is that the Ph.D's already in the country will produce Ph.D's locally. This is horrible news for math in Pakistan. Mathematics is a global activity, both teaching and research. This is also true for other sciences. We live in a global village today. We as a human species learn from each other regardless of boundaries and politics. There is no place for politics – petty or otherwise – in mathematics. The need for

sharing ideas is paramount in math. This idea of producing Ph.D's locally is a bad one. We don't have too many Ph.Ds in Pakistan. The result will be that only that branch pf math will be researched and taught that these few Ph.Ds specialize in. Moreover, Pakistani universities and institutes just don't have the proper infra structure to provide up to date research information potential Ph.D's. See, we already depend on the international community for textbooks and research materials. Then why stop our youngsters from going abroad and doing Ph.Ds there? If nothing else, at least they will get the exposure they need to understand the global essence of mathematics in the modern world. The International Congress of Mathematics is taking place in Beijing, China in a few days. It is being held in The People's Square, and being inaugurated by the President of China. It is at this congress that the Field Medal – the highest and most prestigious award in math - will be awarded. There are only 2 Pakistani attending it. The government should have made a greater effort to send more Pakistani mathematicians to the congress. Pakistan used to be a member of the International Union of Mathematics, and organization that promotes math activity globally. Professor Raziuddin Siddiqi was a mathematician in a position to get the funds from the government to pay the membership dues. The benefits of the membership were great. However, this was 30 years ago. Today, we are no longer a member.

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Quantitative Finance Positions

Alpha Simplex Group is a Cambridge-based quantitative investment management company seeking to hire research scientists for its portfolio management and strategy design group. Most Alpha Simplex personnel have advanced degrees in computer science, statistics, mathematics, physics, finance, economics, or operations research. However, we are more interested in raw talent than in degrees. We are especially interested in individuals with undergraduate or graduate training in the following fields (no prior experience in the financial industry is necessary):

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* Experimental Physics
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* Deep interest in applying quantitative methods to real-world problems
* Strong analytical problem-solving skills
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* Experience in dealing with large databases and database management systems

If you are excited by the prospect of changing the investment management industry by developing and implementing cutting-edge technologies that span many diverse disciplines, and you are at the top of your field, we want to meet you. Please contact:

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Alpha Simplex Group, LLC
One Cambridge Center
Cambridge, MA 02142
or e-mail: careers@alphasimplex.com

3RD PURE MATHEMATICS CONFERENCE 2002 HELD

The 3rd Pure Math Conference (PMC) was held in Islamabad on 9th -10th August 2002. The conference is annual event and has been held since 2000. The conference was sponsored by Pakistan Science Foundation, Pakistan math society, and Allama Iqbal Open University. Dr. Arshad Mehmood, Chairman of the math department of Allama Iqbal Open University (AIOU), and the General Secretary of the PMS.

Speaking to the conference in the inaugural address, the chief guest Dr. Hameed Ahmed Khan, Executive Director of Commission on Science and Technology for Sustainable Development, said that mathematical sciences are playing an important role in the overall scientific and technological development of countries around the world. He said: "The uplift of our economy requires that we pay due attention to science and technology. For the development in sciences, a sound mathematical foundation is a prerequisite as math forms the backbone of all physical and natural sciences."

Dr. Khan stressed upon the fact that the world today is making gigantic strides in using information technology as an engine for development and IT takes its roots from mathematics and only a solid foundation in math gives rise to latest research in IT. He added that it is unfortunate that this important aspect has been ignored in Pakistan, but sharing stressed that we can access the latest models that are developed by mathematicians around the world.

Dr. Syed Altaf Hussain, Vice chancellor of the AIOU, appreciated the efforts of Professor Qaiser Mushtaq – president of the PMS and chair of math dept at Quaid-i-Azam University - for setting the tradition of organizing the first two Pure Math conferences in 2000 and 2001.

Professor Qaiser Mushtaq stressed on the need for developing an adequate mathematical culture in Pakistan. He regarded the series of the Pure Math Conferences as an important means to improve quality of research in math and expose young mathematicians to math at the highest level.

Various noted mathematicians from various local and Middle Eastern universities attended the co9nferences, and 18 research papers were

presented on various math topics. Dr. B.A Saleemi, a senior and renowned Pakistani mathematician who has been at the Quaid-i-Azam University and the King Fahd University in Saudi Arabia, Dr. S.M. Yusuf, Dr. Sarwar Kamran (VP of PMS), and Dr. A.B Thaheem from King Fahd University were present at conference and some of them presented their research papers.

A consensus was reached regarding the state of math in Pakistan at the end of the 3rd PMC through the consent of majority of the attendees and the senior mathematicians mentioned above. The following was agreed upon

1) With the advent of private and semi-private institutions in Pakistan, teaching in mathematics has become more lucrative than research. This has further aggravated, in some instances, the case where math is considered as an extra subject to be studied to move into some engineering filed.

2) The country as a whole and the government are taking utilitarian approach to sciences in Pakistan today. This is hurting math. Math is a subject in which practical benefits may take centuries to manifest. Knot theory is just such a situation, where this subject was theoretically developed in the early 1900's and is now being extensively used in genetics. This attitude of the government needs to be changed, at least in the case of math.

3) In light of the above, the PMS should be used as a forum to bring about a difference in the state of math in Pakistan. It was decided that the PMS, the industrial sector, and the government policy makers should be invited to a tripartite meeting in which common ground should be found for all parties involved in the form of more support (financial and otherwise) for mathematical research both pure and applied which can directly affect the economical situation of Pakistan as well as promote math to the highest levels.

■

CIIT HOSTS CONFERENCE ON COMPUTATIONAL MATHEMATICS

The Comsats Institute of Information Technology hosted a computational mathematics conference on July 28th in Islamabad. This was the first of its kind at CIIT. There were four speakers who presented their research, among whom were Dr. Abdul-Khaliq from Western Illinois University, and Professor Qaiser Mushtaq of Quaid-i-Azam University.

■

A THING OF WONDER…

I was presented the following by an Indian friend of mine in California. He maintained that Indian math is the best, and this was an example. He challenged me to find the reason behind this phenomenon.

"The multiplication of any natural number by 9 gives a result in which the sum of the digits is always equal to 9 or divisible by 9."

It is relatively simple to prove this of course, but I think the newer students of mathematics will enjoy this one. Remember what Hardy said: "There is no place in the world for ugly math." Find the Elegant Solution! Have fun.

■

This symbol ■ that you see after the articles in this Newsletter is called the Halmosian. It is named after Paul Halmos, the renowned Hungarian – American mathematician of the 20th century. He started using this symbol at the end of his proofs, and it caught on. You can find this in almost all textbooks and research papers these days. Paul Hamlos is currently at Santa Clara University, California, USA.