| May 21, 2002 | Masood Khan | Exact Solutions for Magneto-Hydrodynamic Flow in a Rotating Fluid |
| May 28, 2002 | M.Sarwar Saeed | Actions of the Group $< x, y : x^2 = y^4 = 1 >$ On $PL(F_p)$ |

The seminars are held every Tuesday in the seminar Hall of the Department of Mathematics at 1.30 pm. All interested are welcome. Tea is served after the seminar. The abstracts are welcome with the speakers on request.

Pakistan Mathematical Society
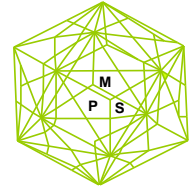
- **Editorial**

- **Computer based education and Gifted Youth**
  Article by the Editor

- **Past Events of the PMS**
  Lectures and events

- **Mathematics News**
  Jobs
  Conferences

- **Seminar Series**
  Quaid-I-Azam University

MATHEMATICS SEMINARS AT QUAID-I-AZAM UNIVERSITY

Date	Speaker	Title
February 12, 2002	Mohammad Shabbir	Projective and Divisible S-Systems
February 19, 2002	Sarmad Abbasi	How to Navigate a Robot
March 5, 2002	Sohail Nadeem	An Oscillating Hydro-magnetic non-Newtonian Flow in Rotating System
March 12, 2002	Faisal Shah Khan	Computer based math Education
March 19, 2002	Azhar Iqbal	Quantum Game Theory
April 2, 2002	M.Raheel	The Flow of a Third Grade Fluid on an Oscillating Plate
April 9, 2002	Qaiser Mushtaq	Graph Theory
April 16, 2002	Khalid Rashid	Measuring the Universe
April 23, 2002	Noor Mohammad	Multipliers on C^* Algebra
April 30, 2002	Faryad Ali	Fischer-Clifford Theory of Groups
May 7, 2002	Tasawar Hayat	Peristaltic Motion of a Johnson-Segalman Fluid
May 14, 2002	Tariq Maqsood	Homomorphic Images of $\Delta(2,3,11)$

EDITORIAL

This is the first issue of the quarterly Newsletter of the Pakistan Mathematical Society. As the information secretary of the PMS and the Editor of this Newsletter, I welcome the members and extend my gratitude for their support for the society. I hope that all the members and the current officers of the society will work together to make PMS into a stable platform for the development of mathematics in Pakistan, and that this pattern of co-operation will persists for good. I predict nothing but success for PMS for many years to come.

Since this is the first issue of the Newsletter, it may not be very impressive. Nonetheless, we have to start somewhere. Keeping this in mind, I invite constructive criticism from all the readers. Comments and ideas about the layout and the content will be entertained wholeheartedly.

PMS started off in June 2001. After the elections on June 26th, the officers got busy with the various administrative requirements. Registration with the Office of Registrar for Societies was the most important one. PMS was registered with this office in November 2001. The General Secretary and the Treasurer were busy opening a Bank account for the Society. I found myself (with the help of some executive members) preparing the logo and the letterhead for PMS' official communications. Administrative matters were the topic of discussion in the first few meetings of the Officers and the Executive members. With the diligent efforts of everyone, the matters were taken care of. During this time, PMS was successful in getting a considerable membership.

In the meantime, PMS also arranged two events. The first was the Pure Math Conference 2001 in August 2001 in partnership with the Math Dept of Quaid-e-Azam University and the Pakistan Science Foundation. Prominent Mathematicians from all over Pakistan gathered to present their research papers, and the situation of mathematics education at all levels was discussed. The second event was in cooperation with the National Center for Physics. This was the holding of a lecture by Dr. Mohammed Saleem, a Pakistani mathematician at San Jose State University, California, USA. Dr. Saleem is also involved in research on wing designs at NASA's AMES research center. The lecture was a success.

PMS is off to a good start. We have received a positive response from the members and the Pakistani mathematical community. The future plans of the society include the holding of the regular events that include monthly seminars / talks concerning mathematics education at the primary and secondary levels; a mathematical colloquium / lecture series based on invited mathematicians from Pakistan and abroad; PMS looks forward to establishing a working relationship with the MathSciNet of the American Math Society in order to provide its members with an extensive database of mathematical and scientific research, etc. A detailed outline of these goals is available in the brochure of the society online at http://www.geocities.com/pakistanmathsociety.

When one realizes what it means to say that the United States government hires 75%-85% of its mathematics graduates and PhD's, one cannot escape a feeling of loss and despair about the state of mathematics in Pakistan. The members and the community of mathematicians agree with the reasoning that mathematics education and research in Pakistan is in urgent need of upgrading and development. With this common philosophy shared between the members and the community, PMS looks forward to a bright working future. Thank you all for your support for the PMS.

Faisal Shah Khan

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Learning and understanding of different subjects vary due to nature of each subject. The learning of mathematics is much different from the learning of other subjects. It requires patience, accuracy, clear logical thinking, and a desire for learning it. If any of the above are lacking, then the essence of mathematics cannot be appreciated.

It has been observed that students at the lower levels are afraid of word problems, the main reason for this being their fear of converting linguistic words into mathematical symbols and equations. If a student understands a particular problem and converts the given problem into mathematical symbols, then he has done a lot.

For students of mathematics, it is necessary that they should not feel confused by the symbols, sign, letters, and numbers involved. Many of the students at school level are fearful of math because of their confusion about symbols.

UGC VISITING PROFESSORSHIP

The University Grants Commission (UGC) has launched a program of _UGC Visiting Professorship_ with an objective that the expertise and know-how of senior and highly qualified teachers and researchers of older universities to extend to relatively younger universities for shorter period to share it with their teachers. The Visiting Professors will deliver lectures and also guide the research projects of these universities on the strength of their outstanding academic merit and long teaching experience. Such an exposure of younger teachers and opportunities of exchanging views with the senior researchers and scholars will indeed be taken as sound and healthy improvement in universities education standard.

Under the program, the universities interested will invite a particular teacher through the Vice Chancellor of the university concerned for delivering lectures/guiding research program for development of a specific department. Such request along with the consent of the respective teacher and the university could be forwarded to University Grants Commission for consideration. As per criteria fixed, a teacher holding the rank of a Professor or Associate Professor in a scientific and emerging discipline shall be allowed to undertake the visit for a period of one week. He shall be paid an honorarium of Rs.5000/- and Traveling Cost by the UGC. The recipient university will arrange for his boarding, lodging and local transport, while the lending university will treat the period of his visit as on duty.

Although symbols and signs make mathematical ideas brief and aesthetic, their specific meanings and the need to use these must be made clear to the student in order for them to enjoy this subject fully.

Muhammed Irfan Ali

THE PMS LOGO

The logo of the PMS is the wire frame of aTriakis-Icasohedron, the Dual Polyhedron of the <u>Truncated Dodecahedron</u> <u>Archimedean Solid</u>. By the <u>Duality Principle</u>, for every <u>Polyhedron</u>, there exists another <u>Polyhedron</u> in which faces and <u>Vertices</u> occupy complementary locations. This <u>Polyhedron</u> is known as the dual, or Reciprocal. The dual polyhedron of a <u>Platonic Solid</u> or <u>Archimedean Solid</u> can be drawn by constructing <u>Edges</u> tangent to the <u>Reciprocating Sphere</u> (a.k.a. <u>Midsphere</u> and <u>Intersphere</u>) which are <u>Perpendicular</u> to the original <u>Edges</u>.
The dual of a general solid can be computed by connecting the midpoints of the sides surrounding each <u>Vertex</u>, and constructing the corresponding tangent <u>Polygon</u>. (The tangent polygon is the polygon which is tangent to the <u>Circumcircle</u> of the <u>Polygon</u> produced by connecting the <u>Midpoint</u> on the sides surrounding the given <u>Vertex</u>.) The process is illustrated at

http://hades.ph.tn.tudelft.nl/Internal/PHServices/Documentation/MathWorld/math/math/d/d419.htm

Have fun!

OMBUDSMAN'S FINDINGS ON IMPACT FACTOR

In his findings dated 26 September 2001 signed by Justice Muhammad Bashir Jehangir, the Federal Ombudsman acknowledged that the Impact Factor criterion has its limitations in evaluating the academic performance of individual scientists, particularly in the disciplines of mathematics and physics.

He also said that it would certainly be unfair that those in the aforementioned disciplines be judged wholly and solely on the basis of this criterion for the purpose of promotions, awards, research grants, etc. This, he continued, would amount to injustice and hence, mal-administration as defined in Article 2(2) of President's Order No. 1 of 1983.

The Federal Ombudsman had arrived at these findings on the complaint by Professor Dr Qaiser Mushtaq of the Department of Mathematics at Quaid-i-Azam University, who is also the President of the Pakistan Mathematical Society and an internationally celebrated mathematician. He had submitted the complaint to the Ombudsman's office on 17 January 2001 that the Impact Factor and Citations Count criterion was being used unfairly by the Ministry of Science and Technology to rate scientists nationally in the country.

The findings by the Federal Ombudsman represents a significant victory for those scientists and academicians who had been fighting against the use of the Impact Factor to rate scientists nationally by the ministry of science and technology.

As stated in the Ombudsman's findings, the complainant had said that the Ministry of Science and Technology misused the Impact Factor criterion. It was originally invented in America to measure the extent of readership of journals, not to rate scientists in the biased and subjective manner, as the Pakistan Council for Science and Technology (PCST) has done by publishing annually a catalogue rating scientists in Pakistan. The catalogue rates the minister of science and technology, Professor Atta ur Rehman, at the top of the list having the highest Impact Factor.

USING COMPUTER-BASED EDUCATION AND IT FOR REACHING OUT TO MATHEMATICALLY TALENTED YOUTH

By Faisal Khan

I spent the past 9 years of my life in the United States getting "higher education." I came back to Islamabad in February of 2001. As a youngster, my father used to call me "gifted," even though I got a 2nd division in matriculation. I used to wonder what he meant by "gifted," given that I hardly ever excelled in school. Later as I grew up, I realized that my father used that word to explain my active use of memory and creative and imaginative thinking. But that was my father's opinion, biased at best. And I haven't really made an impact so far in any social or scientific field, including my own – mathematics. So was I really gifted, and what does it mean to be gifted? A job at a program at Stanford University (USA) for promoting gifted and talented youths gave me some answers. First thing I learnt was that the term "gifted" almost always means intellectually talented. Second, that I was not exactly gifted!

In 1998, I took a job as a mathematics instructor at the *Education Program for Gifted Youth* (EPGY) at Stanford. It is a computer-based and Internet based education program that offers courses in various subjects. The audience of theses courses is "gifted" youths, say up to 22 years of age. At EPGY I decided after sometime that "gifted" means an individual who can use creative thinking, mental focus, and hard work to excel intellectually. Note that excelling "intellectually" and excelling "academically" are two different things. It is this difference that made me "gifted" in my father's opinion. Although I mostly showed average or less performance in schools, I would use my imagination and thought creatively. I remember that at age 16, I would try to strike a conversation with my friends about space and the universe, history and ancient cultures, and human evolution, and they would groan and tell me to be quite. However, I hardly ever worked hard at anything, even at creative thinking! So I wasn't exactly gifted. Yet, looking at history I was able to find ample evidence that suggested that this was the right definition of "gifted."

The 19th century French mathematician, Evariste Galois started his study of mathematics at age 16, tried to get into the prestigious French Math academy, the Ecole' Polytechnique, but failed twice. He could not convince the people at the Ecole' that what he was saying was not insane, but actually a crucial breakthrough in mathematics. His lack of "standard" approaches

PAKISTAN ACADEMY OF SCIENCES AWARDS GOLD MEDAL TO PROFESSOR QAISER MUSHTAQ

The Pakistan Academy of Sciences (PAS) awarded its annual prestigious Gold Medals on 22nd December 2001. Dr Abdul Qadeer Khan, who is the President of the Pakistan Academy of Science, conferred the prize. The Gold Medal for research in the field of mathematics has been awarded to Professor Dr Qaiser Mushtaq of Quaid-i-Azam University.

Professor Mushtaq, a celebrated mathematician, has received a number of national and international awards in the past. He is currently President of the Pakistan Mathematical Society, and has been a vocal opponent of the use of the Impact Factor by the Pakistan Council for Science and Technology (PCST) as a criterion to rate scientists in Pakistan.

A pure mathematician, Professor Mushtaq is the inventor of the well-known Parameterization of actions of the modular group on the projective lines over Galois fields, and the co-inventor of the Coset Diagrams for the modular group. He has collaborated in research with legendary mathematicians like Professor Graham Higman (Oxford) and the late Professor Gian-Carlo Rota (MIT).

Professor Mushtaq has published some 70 research papers and seven books. Many of his papers are cited in PhD theses and research papers. He is the only Pakistani mathematician who has published papers in journals, which are amongst the mathematical journals rated as the best by the Institute of Scientific Information, Philadelphia, USA.

He has won several international and national awards: Chowla Medal; Salam Prize; two Mathematician of the Year Awards by the National Book Council of Pakistan; Gold Medal of Honor from ABI of the USA; M. Raziuddin Siddiqi Gold Medal of the Pakistan Academy of Sciences; 5th Khowarzmi Award by Iranian Research Organization for Sciences and Technology, Iran; Young Scientist of the South Award by the Third World Academy of Sciences; and 5th National Education Award (1999) by the National Education Forum. Professor Mushtaq has been an invited speaker at Oxford University, Mathematical Sciences Research Institute (MSRI) Berkeley, Harvard, and at MIT. He was a Royal Commission's scholar, a Senior Fulbright Scholar, and an Associate Member of ICTP. He was President of the Mathematical Society of Brunei Darussalam. He is an editor and reviewer of a number of international journals.

and total disregard for the board and the chalk for explaining his ideas led his interviewers to dismiss him as a fool. Moreover, his disregard for discipline in making his points clearly was in total contrast to the intellectual discipline and creative thinking he showed in doing math. He is said to have assaulted his professor for asking him to write down his ideas on the board. Nonetheless, his theory on the solvability of general polynomial equations of degree 5 or higher was an enormous breakthrough in mathematics in the last 1500 to 2000 years. Galois died at the age of 21 in a duel spurred by his reckless indulgence in the politics of France at that time. The theory he established is now known ad Galois theory in his honor. Although he was perhaps a loser in life, his gift of creative thinking and hard work made him a champion of mathematics.

Another such "gifted" individual is much closer to home. Srinavasa Ramanujan was a matric fail boy from a village in South India. He lived a poor life, but managed to learn advanced mathematics from an early age. He derived many of the results established by Euler (a Swiss mathematician of the 18th century) when he was 16. He was fortunate to have been recognized by an English mathematician G.H. Hardy in the early 1900's who invited Ramanujan to do research in number theory at Cambridge. There Ramanujan created the most "beautiful" of math, and even today, there are hundreds of his conjectures that remain to be proven. As an undergrad student at Santa Clara University in California, I asked my advisor to do a summer project with me on Ramanujan's works. He smiled bashfully and said that he didn't think any of the faculty at the math department was qualified to do so! So we see another case where "gifted" means creative thinking, mental focus, and hard work to excel intellectually. And of course math is not the only field in which this definition works. Shakespeare in English literature, Beethoven in music, Keynes in economic, and Allama Iqbal in philosophy and Urdu literature come to my mind as people who were gifted. All these may or may not have excelled academically. But all of these were great users of creative thinking, imagination, and mental focus. Their eventual impact on their respective fields in undeniable.

During my stay at the EPGY as an instructor, I realized that in Pakistan (and in the world in general) being gifted, or coming close to it, is considered an unusual social behavior. The reason for this, in my opinion, is that gifted people think, and this often results in headaches! And most people don't want that, particularly if the overall system of the society doesn't really care. So what if you are a dreamer and use imagination? These don't get jobs. So why bother with the headache?

NEWS

VISITING MATHEMATICIAN FROM TAJIKISTAN

Islamabad, 16 Feb: A mathematician from Tajikistan, Professor Dr. Nusrat Rajabov, gave a seminar at the Mathematics Department of Quaid-i-Azam University today. He is visiting Pakistan as a guest of COMSATS. He appreciated the efforts of COMSATS' Advisor Science, Dr Nasim Anwar, in promoting science in Pakistan.

Professor Nusrat is an academician of the elite scientific organization, namely, the Tajik Academy of Sciences. He is also a professor at the department of mathematics at the university in Dushanbe. He is author of many books on topics in applied mathematics. Some of them have been translated into English and Persian and are published by famous publishers. He is author of many seminal research papers.

Professor Nusrat's seminar was on Ordinary differential equations with singular and super-singular coefficients. Mathematics department, Quaid-i-Azam University has the honor of having seminars by some eminent foreign visiting mathematicians such as Professor Graham Higman FRS.

PH.D. Degrees awarded in Mathematics by Quaid-I-Azam University, Islamabad

Azad Akhter Siddiqui
Supervisor: Professor Asghar Qadir
Some Foliations of Black Hole Spacetimes
21st August 2000

Aftab Ahmad khan
Supervisor: Dr Faiz Ahmad
Rational and Thermal Effects on Elastic Wave
Propogation   5th May 2001

Well, if we call ourselves humans, and the best of the beings on this planet, then we better care. And of course not everyone is gifted in a given society. People come close, but very few Ramanujan and Galois are born in this world. But this does not mean that a people who come close cannot be groomed, or the truly gifted cannot be promoted and offered chances to utilize their potential to the fullest. History teaches that such actions are wise actions. During the last year that I have been in Pakistan, I noticed with dismay that none of the higher learning institutions of Pakistan had a program for fostering talent and gift among youths. In the US at least, almost all renowned Universities have centers or programs for promoting and fostering talented youths. I already mentioned Stanford's EPGY program. Then there is John Hopkins' Center for Talented Youth (CTY), Northwestern University's Center for Talent Development (CTD), and Duke University's Talent Identification Program (TIP). No such thing exists at Quaid-e-Azam University, or at Punjab University, or at any other prominent university of Pakistan. One wonders whether any of our scholars even care about the future generations.

Although any program involved in fostering talent has my vote of confidence, the one nice thing about the Education Program for Gifted Youth (EPGY) at Stanford is that it reaches out to talented youths globally. The program uses computers and the Internet to provide gifted individuals around the world with a venue to utilize and groom their intellect. Its courses are in the form of educational software so as to enhance presentation of the subject matter. Most importantly, the program aims to increase the academic performance of the student without disrupting the regular schoolwork of the student. The use of computer and the Internet for fostering talent is unique to this program, and this feature makes it worth knowing about.

Here is some information about EPGY. Most of the information below is taken from EPGY website at http://epgy.stanford.edu

EPGY courses use computer-based multimedia technology. The software presents lectures consisting of digitized sound and synchronized graphics that appear on-screen in the manner in which a teacher would present material in class. The lectures try to capture the informal nature of classroom instruction, in contrast to the more formal style one finds in textbooks. The courses are designed with gifted students in mind. Courses are individualized so that fast

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UNIVERSITY LECTURESHIP IN COMPUTATIONAL NUMBER THEORY AT CAMBRIDGE

Broad field:	Computational Number Theory
Duration:	Three or five years
Position:	University Lectureship
Institution:	University of Cambridge, Department of Pure Mathematics and Mathematical Statistics
Starting date:	By 1 October 2002 but available immediately
Contact person(s):	Head of Department
Application deadline:	31 March 2002
Email:	S.Lowe@dpmms.cam.ac.uk
WWW:	http://www.dpmms.cam.ac.uk/

Wonder or Blunder?

It is true that $i = \sqrt{-1}$ What if we square i? We know from complex number theory that the result should be –1. But

$$i^2 = i \cdot i = \sqrt{-1} \cdot \sqrt{-1} = \sqrt{(-1)(-1)} = \sqrt{1} = 1$$

What's going on here? Do we know our alghebra well enough? Enjoy!

learners can proceed quickly through material while slower learners will receive additional instruction. EPGY offers courses in six subject areas: Mathematics, Physics, Computer Science, English, Political Science and Music.

EGPY grows out of more than 35 years of research at Stanford University in both gifted education and computer-based distance learning.

MATHEMATICS JOBS

MARIE CURIE POSTDOCTORAL FELLOWSHIP AT GALWAY

Broad field:	Pure mathematics
Duration:	24 months
Position:	Marie Curie Postdoctoral Fellow
Institution:	Mathematics Department, Nat. Univ. Ireland, Galway
Starting date:	Any date before 01.09.02
Area(s) preferred:	Algebra/Topology
Contact persons(s):	Graham Ellis graham.ellis@nuigalway.ie

Application deadline: 31.03.02

FACULTY POSITIONS - BIOSTATISTICS, NATIONAL UNIVERSITY OF SINGAPORE

Broad field:	Biostatistics
Duration:	1 year - for Research Fellow
Position:	Research Fellows, Visiting Position, Regular Position at all levels.
Institution:	Department of Statistics and Applied Probability, National University of Singapore
Starting date:	Immediately (preferably).
Area(s) preferred:	Statistical Genetics, Clinical Trials, Neuro Imaging, Multivariate Survival Analysis and Environmental Biostatistics.
Contact person(s):	Ms Norizan Selamat

Application deadline: 31 March 2002 or when all positions are filled

E-mail:	stans@nus.edu.sg
Department:	http://www.stat.nus.edu.sg/

Past events of the PMS

- Pure Math Conference 2001, 8-9 August 2001, Islamabad.

- Official website of the PMS launched at the temporary address
  http://www.geocities.com/pakistanmathsociety

- Registration of Pakistan Mathematics Society with the Office of
  the Registrar on 16th November 2001, giving PMS an official existence.

- Lecture at Razmi Auditorium QAU by Dr. Saleem of San Jose
  State University in collaboration with the Center for Physics.

Mathematics is the cheapest science. Unlike physics or chemistry, it does not require any expensive equipment. All one needs for mathematics is a pencil and paper.

George Polya

More math quotes at
http://www.mathacademy.com/pr/quotes/index.asp

MATH NEWS

CONFERENCES ON MATHEMATICS

International Conference on Algebra and Its Applications
(ICAA 2002) March 18 – 20, 2002
Chulalongkorn University, Bangkok 10330, Thailand

The Sixth Australian Conference on Mathematics and Computers in Sport
1-3 July 2002, Bond University, Gold Coast, Queensland.

17th "Summer" Topology Conference
1-4 July 2002, Auckland, New Zealand.

Algorithmic Number Theory Symposium V
7-12 July 2002, University of Sydney.

Nonlinear Partial Differential Equations and Related Topics
An international conference to commemorate the 60th birthday
of Professor Neil Trudinger. 15-19 July 2002, Australian National University, Canberra.

International Conference on Algebras and related Topics
Hong Kong Aug 14-17. Contact KPShum@math.cuhk.edu.hk

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/