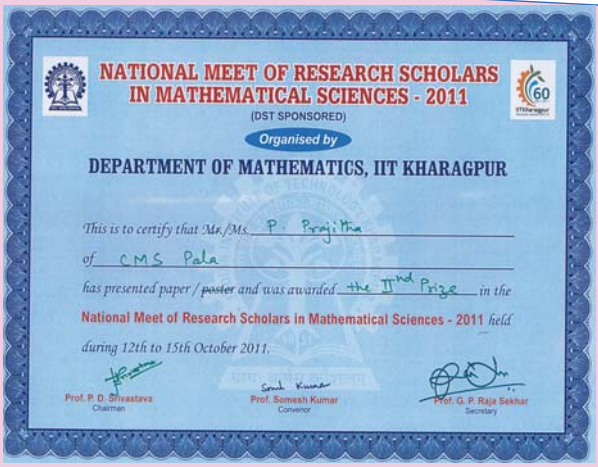
Circulated via:
ISWI Newsletter

CMS NEWS

NATIONAL AWARDS FOR OUR RESEARCH SCHOLARS

Best paper presentation award: Prajitha, P. (DST-JRF) at CMS won the second prize in the all-India Research Scholars' Meet of 2011 held at IIT Kharagpur, India from 12th to 15th October 2011. This is the 11th national/international level award won by CMS scholars. She was also the first-rank holder in her M.Sc degree from Calicut University, Kerala.

Prajitha presenting the award winning paper



NATIONAL MEET OF RESEARCH SCHOLARS IN MATHEMATICAL SCIENCES - 2011
(DST SPONSORED)
Organised by
DEPARTMENT OF MATHEMATICS, IIT KHARAGPUR

This is to certify that Mr./Ms. P. Prajitha
of CMS Pala
has presented paper / ~~poster~~ and was awarded the IInd Prize in the
National Meet of Research Scholars in Mathematical Sciences - 2011 held
during 12th to 15th October 2011.

Prof. P. D. Srivastava, Chairman
Prof. Somesh Kumar, Convenor
Prof. G. P. Raja Sekhar, Secretary

Young Scientist Award 2012 : Dilip Kumar (DST-SRF) at CMS won the prestigious Young Scientist Award of the Indian Science Congress Association for the year 2011-2012 for Mathematical Sciences (including Statistics) at the competition held in Bhubaneswar, Orissa, India on 14th October 2011. This is the 12th national/international award won by the scholars at CMS.

He received the award from Dr A.P.J. Abdul Kalam, the former President of India. All the newspapers in Kerala reported the news item and Malayala Manorama Newspaper ran a feature article on Dilip Kumar and his contributions. Also he was given a reception on 25th January 2012 by Kristhu Jyothi Placid Vidya Vihar School, Changanacherry, Kerala, India, where he taught for a while before joining CMS as a research scholar.

Dilip Kumar receiving Young Scientist Award from Dr A.P.J. Abdul Kalam, Former President of India

Dilip Kumar is felicitated by Kristhu Jyothi School, Malayalam film actress Kavya Madhavan beside him

GOOGLE CITATIONS

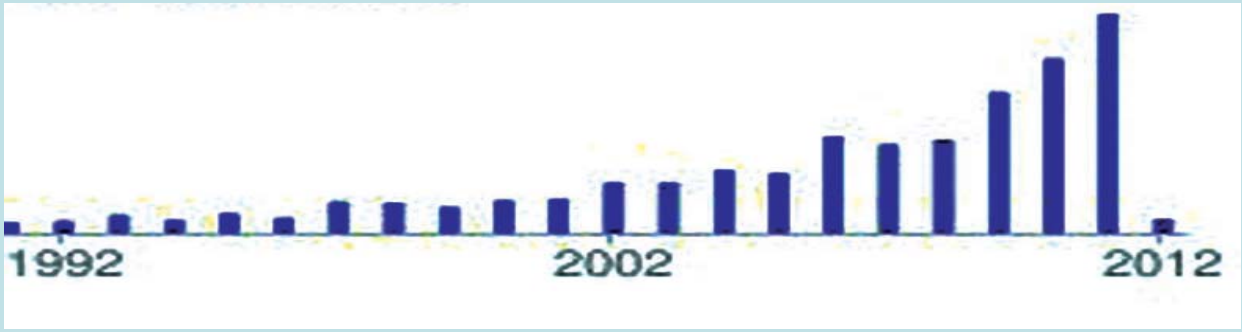
Google Scholar Citations has a citation graph indicating citations of publications of various authors. Citations of Dr A.M. Mathai and Dr H.J. Haubold are already in Google's site. The following are the details as of 5th April 2012.

Author	All publications cited	Total number of citations (since 2007)	h-index	i-10-index
Haubold, H.J.	1060	763	16 (15 since 2007)	31 (20 since 2007)
Mathai, A.M.	3392	1727	24 (19 since 2007)	55 (31 since 2007)

i-10= number of publications with at least 10 citations
h-index = largest number h such that h publications have at least h citations
Note : Dr R.K. Saxena has a geneology graph of citations by Microsoft Inc. Number of publications cited from 1991 onwards = 16; Total number of citations from 1991 onwards = 114; G-index = 10; H-index = 7.

Haubold, H.J. (Google, http://scholar.google.com/citations?user=xFz4ZaUAAAAJ)

Mathai, A.M. (Google, http://scholar.google.com/citations?user=WUV6-7MAAAAJ)



Saxena, R.K. (Microsoft indices, http://65.54.113.26/Author/3596479/ram-k-saxena)

Publications from CMS during the past few months since the publication of Vol. 14, No.2, 2011 of the Newsletter

Research level book

2012 SERC School Notes [*Multivariable and Matrix Variable Calculus with Applications: 2012 theme: Optimization* (March 2012)], CMS Publication No. 44.

Modules

Module 5 (third reprinting, March 2012) A.M. Mathai, *Integrals and Integration*, CMS Publication.

Module 2 (third reprinting, April 2012) A.M. Mathai, *Determinants and Eigenvalues,* CMS Publication.

Papers published/accepted in refereed journals during the past few months, since the publication of Vol.14, No.2, 2011 of the Newsletter

H.J. Haubold, A.M. Mathai and S. Thomas (2012): An entropic pathway to multivariate Gaussian density. *Mathematica, Aeterna,* **2(1)**, 51-61.

A.M. Mathai (2011): Stochastic models under power transformations and exponentiation. *Journal of the Indian Society for Probability and Statistics (ISPS Journal)*, **13** (to appear).

Anitha Thomas (2011): On a fractional master equation. *International Journal of Differential Equations,* Vol. 2011, ID 346298, 13 pages.

K.A. Germina and Sona Jose (2011): A creative review on distance pattern distinguishing sets in a graph. *Journal of Combinatorics, Information and System Sciences* (to appear).

Anitha Thomas (2012): Some special functions and fractional Laplace equation. *Journal of the Indian Mathematical Society (Allahabad)* (to appear).

A. Haubold, H.J. Haubold and Dilip Kumar (2012): Solar neutrino records: Gauss or non-Gauss is the question. arXiv:1202.1549v1 [physics,gen-ph], 7 Feb 2012.

H.J. Haubold and Dilip Kumar (2011): Analytical results connecting stellar structure parameters and extended reaction rates. arXiv:109.5613v1 [astroph.SR], 23 Sept.2011.

Dilip Kumar and H.J. Haubold (2011): Analytic representations of standard and extended non-resonant thermonuclear function with depleted tail through pathway model. arXiv:1109.5610v1 [astro-ph.SR], 23 Sept. 2011.

Papers in refereed Proceedings

Dhannya P. Joseph (2010) : Some applications of Mellin convolution and H-function in extended inverse Gaussian. *Proceedings of the 9th International Conference SSFA*, **9**(2010), pp. 63-74.

Nicy Sebastian (2011): On multivariate generalized gamma Bessel model. *Proceedings of Discrete Mathematics and Computational Statistics* (to appear).

Ginu Varghese (2011): On dual continuity of L-subsets. *Proceedings of International Conference on Algebra and Its Applications (ICOAA 2011)* (to appear).

K.A. Germina and Sona Jose (2011): Identifying graph automorphisms using dpd-sets. *Proceedings of International Conference on Algebra and Its Applications (ICOAA 2011)* (to appear).

Diana Mary George (2011): Rees matrix representation for a rectangular band. *Proceedings of International Conference on Algebra and Its Applications (ICOAA 2011)* (to appear).

Papers presented in conferences and lectures given

DST-JRFs Prajitha P., Princy T. and Naiju M. Thomas participated and presented papers in the *National Symposium on Statistics and Its Applications for Young Researchers* at the University of Madras, Chennai, on 24-25 February 2012.

DST-SRF Dilip Kumar, DST-JRFs Sona Jose and Ginu Varghese participated in the *National seminar on Strategies in Enhancing Research,* held at Anna University of Technology, Coimbatore, 16-17 February 2012.

DST-SRF at CMS Dilip Kumar participated and delivered an invited talk in the *99th Indian Science Congress* held at KIIT University, Bhubaneshwar, Orissa from 3 to 7 January 2012. Dilip Kumar won the Young Scientist Award of the Indian Science Congress in this meeting.

DST-JRFs at CMS Sona Jose, Diana Mary George, and Ginu Varghese participated and presented papers

at the *International Conference on Algebra and Its Applications (ICOAA-2011)* held at Thanjavur, India on 14-15 December 2011.

DST-SRFs Seema S. Nair and Nicy Sebastian participated and presented papers in the *National Conference on Advances in Statistical Theory and Applications (ASTA-2011)*, held at Bangalore University, 16-18 November 2011.

DST-SRF at CMS Dilip Kumar participated and presented the paper in the ***Young Scientist Award Programme*** *of the Mathematical Sciences section of Indian Science Congress Association* held at KIIT University, Bhubaneshwar, Orissa from 13 to 14 October 2011.

DST-JRFs at CMS Prajitha P. and Princy T. participated and presented papers at the *National meet of Research Scholars in Mathematical Sciences* held at IIT Kharagpur, India on 12-15 October 2011. Prajitha P. also won the Second Prize in this all-India competition.

Dr A.M. Mathai gave a series of about 7 hours of **lectures** plus 7 hours of consultation on Testing of Statistical Hypotheses and related topics at the DST Centre for Interdisciplinary Mathematical Sciences at BHU on 1st, 2nd and 3rd August 2011. He gave a series of 24 hours of **lectures** at the same centre from 28th November to 3rd December 2011 and again on 5-6 December 2011.

Dr A.M. Mathai inaugurated and gave the **keynote address** at a National Conference in Jaunpur, UP from 4-5 December 2011.

Dr A.M. Mathai gave a **keynote address** at a National Conference in Gwalior, MP, India from 8-10 December 2011.

Dr A.M. Mathai was one of the resource persons in the *National Workshop on Applications of Mathematics in Industrial Research* at Lakshmibai College of Delhi University, Delhi and he gave an invited talk on 19th January 2012.

Dr A.M. Mathai was one of the three judges who judged all the final projects of the schools in Indukki District of Kerala under the *INSPIRE program of DST*. There were 64 projects and four were selected on 24th January 2012 for the State level competition. From the State level competitors, a team will be selected for the national level competition. He also talked to the gathering on 31st January 2012 at Gandhiji Study Centre at Nadukani, Idukki District, run by the State Minister Shri P.J. Joseph.

Dr A.M. Mathai inaugurated the *National Conference on Graph Theory* at the Engineering College Trivandrum, Kerala, India and gave the **keynote address** on 2nd February 2012. He also gave a 3-hour lecture at St Dominics College, Kanjirappally, Kerala on 9th February 2012.

Dr A.M. Mathai's inaugural address at the National Conference in Gwalior, India

A memento is presented to Dr A.M. Mathai at Gwalior, India

DST-SRF, Nicy Sebastian giving lecture at Bangalore

DST-JRF, Prajitha P. giving lecture at Madras University, Chennai

DST-JRF, Princy T. giving lecture at Madras University, Chennai

DST-SRF, Seema S. Nair giving lecture at Bangalore

DST-JRF, Naiju M. Thomas giving lecture at Madras University, Chennai

DST-SRF, Dilip Kumar giving lecture at Bubaneswar

Positions open

Three positions of Assistant Professor (Ph.D and significant publications; UGC scale) and two positions of JRF (M.Sc minimum, NET is compulsory; DST-JRF) in any area of mathematical sciences (Mathematics, Statistics, Theoretical Physics, Theoretical Computer Science). Apply with full cv to the Director, Centre for Mathematical Sciences.

Dilip Kumar (third from the left) and other Young Scientist Award winners in different subjects at the Indian Science Congress 2012

CAREER PROSPECTS ON RESEARCH IN MATHEMATICS (WAYS AND MEANS)

DILIP KUMAR

Senior Research Fellow (DST), Centre for Mathematical Sciences (CMS), Phone: +91 9446195433, E-mail : dilipkumar.cms@gmail.com

It is always a question "What next?" for those who have completed their MSc in Mathematics. Most of the postgraduates in Mathematics think of going for B Ed as their next career option. A better alternative for Mathematics postgraduates could be a research career in Mathematics. A postgraduate in Mathematics with keen interest in the subject and a skill to understand more about the connection of Mathematics with other subjects will be able to nurture himself or herself as a successful researcher in Mathematics.

The first question to start with, is to find a suitable place to start the research career. There are many institutes in India where quality research in Mathematics (both pure and applied) takes place. Some of the research institutes in India which mainly focus on research in Mathematics and their allied subjects are Harish Chandra Research Institute (HRA), Allahabad; Institute of Mathematical Sciences (IMSc), Chennai, Tamil Nadu; Centre for Mathematical Sciences (CMS), Pala, Kerala; Chennai Mathematical Institute (CMI), Chennai, Tamil Nadu; Centre for Inter-disciplinary Mathematical Sciences (CIMS), Banaras Hindu University, Varanasi, UP; Centre for Mathematical Sciences (CMS), Banastali, Rajastan. Besides these, there are Indian Institutes of Technology (IIT)s, Indian Institute of Science (IISc), Tata Institute of fundamental research (TIFR), National Institutes of Technology (NIT)s, Indian Institutes of Science, Education and Research (IISER), Indian Statistical Institute (ISI)s and most of the university departments also provide Ph.D programme in Mathematics and Statistics.

Websites of some the leading research institutes in India providing Ph.D programme in Mathematics are

WEBSITES

HRI Allahabad: http://www.hri.res.in
IMSc Chennai: http://www.imsc.res.in
CMS Pala: http://www.cmsintl.org
CMI Chennai: http://www.cmi.ac.in
CIMS Banaras: http://www.bhu.ac.in/CIMS/
CMS Banastali: http://banasthali.org
IIT Kanpur: http://www.iitk.ac.in
IIT Bombay: http://www.iitb.ac.in
IISc Bangalore: http://www.iisc.ernet.in
TIFR Bangalore: http://www.tifr.res.in
ISI Kolkata: http://www.isical.ac.in

Who can apply

The minimum requirement for enrolling for Ph.D in any of these institutions is to pass the CSIR- UGC (NET) examination for the award of Junior Research Fellowship and eligibility for lectureship or GATE examination or the entrance examination conducted by the respective institutions. Usually CSIR- UGC (NET) examination is conducted twice a year one in June and the other in December. More details on CSIR- UGC (NET) examination can be obtained from the website http://www.csirhrdg.res.in. Some of the institutions like IITs, IISc, NITs, IISERs admit candidates for Ph.D with a valid GATE score. The GATE examination is conducted once every year by IIT's and its validity is for 2 years. For details see the website of IIT's (IIT Kanpur: http://www.iitk.ac.in/gate/, IIT Bombay: http://www.iitb.ac.in/gate/). Besides these CSIR- UGC (NET) examination or GATE examinations, some institutes like HRI takes candidates for Ph.D by the entrance examinations conducted by National Board of Higher Mathematics (NBHM). More details can be obtained from the website http://www.nbhm.dae.gov.in. For enrollment in a Ph.D programme in Statistics at ISI one has to pass the entrance examination conducted by ISI itself. For more details refer to the website http://www.isical.ac.in/academicprogramme.php. In most of the research institutions one who has passed the CSIR- UGC (NET) examination with JRF or having a valid GATE score can directly appear for the interview.

How to start research

While enrolling for Ph.D one has to select a suitable supervisor for guiding the research work. The supervisor

should be selected according to ones interest in the subject and after knowing whether the supervisor is an active researcher with good number of publications like books and research papers and his research area is of your interest too. Another important aspect in which a researcher has to concentrate is to create a good background in the subject. There are many institutions which provide advanced research level training programmes in various subjects in Mathematics, Statistics and theoretical Physics. Doctoral students, post-doctoral fellows, and teachers in universities and other research institutions can apply for these types of training programmes. These types of training programmes are mainly organized in order to overcome lack of knowledge in their respective subjects. The National Board of Higher Mathematics (NBHM) has launched Advanced Training in Mathematics (ATM) schools. The ATM schools mainly focus on the inter-related areas of algebra, analysis, partial differential equations, discrete mathematics, geometry, number theory and topology. For more details see the website http://www.atmschools.org.

Centre for Mathematical Sciences (CMS), established in 1977, is an internationally recognized premier research and training institute and one of its kind in Kerala covering all areas of Mathematics, Statistics, Theoretical Physics, Computer and Information Science. CMS provides training for undergraduate as well as postgraduate students in Mathematics, Statistics and Physics. Undergraduate training program (UG Camp) is conducted four times a year usually in April, May, September and December. Every year in April-May, there is a research level training camp (SERB Schools) for fresh MSc students in Mathematics, Statistics and Theoretical Physics as well as for research scholars in the above subjects below the age of 35. Usually all the expenses for these camps including travel, boarding and study materials are met by Department of Science and Technology, Government of India (30 seats) and Centre for Mathematical Sciences (15 seats). These camps and schools provide motivation and encouragement for students who are really interested in starting their research career in Mathematics & Statistics. Usually eminent scientists in various science subjects from India and abroad give lectures in these camps. For details see the website http://www.cmsintl.org.

Collecting information for research

After getting a research problem one has to get a thorough understanding about the research problem, its current status and its further possibilities of extension. A research scholar should try to obtain as many publications related to the problem as possible. Most of the research institutes who offer Ph.D programmes may have subscription to many research journals in mathematics and its allied subjects. There are many websites which provide free access to books and research papers.

For downloading books freely one can use the following websites

http://library.nu
http://historical.library.cornell.edu/math/browse.html
http://mathbookshelf.fullerton.edu
http://www.math.gatech.edu/~cain/textbooks/onlinebooks.html
http://www.wisdom.weizmann.ac.il/~borisl/online_notes.htm

For downloading research papers freely one can use the following websites

http://arxiv.org
http://front.math.ucddavis.edu
http://mathnet.preprints.org
http://library.ictp.trieste.it/pages/psearch/prep.php
http://www.ams.org/global-preprints/special-server.html
http://www.ams.org/global-preprints/deptl-server.html

Websites which provides access to research journals with a subscription fee are the following

http://www.jstore.org
http://www.elsevier.com
http://www.sciencedirect.com
http://www.informaworld.com
http://mathematicsweb.org
http://stacks.iop.org

While doing research one should try to apply his/her research problem to various other subjects, as there is a great connection of Mathematics with other subjects. One should also be able to connect his/her results to various new and upcoming subjects which will give the researcher a very good exposure.

Publishing research papers and presenting the research papers in conferences

After working out the research problem one has to submit the results in international peer reviewed journals.

List of research journals in mathematics can be obtained from the following websites
http://www.ams.org/mathweb/mi-journals5.html
http://www.math.fsu.edu/virtual/index.php
http://www.math.psu.edu/MathLists/journals.html

A good researcher should present his/her research work to the international and national scientific community by presenting the research work in conferences. This will help the researchers to get recognition to their work as well as the criticisms will enable them to improve the quality of the work.

To know about the conferences in mathematics and its allied subjects taking place in the world one can make use of the following websites
http://www.ams.org/mathcal
http://www.isam.org/meetings
http://www.netlib.org/confdb/conferences.html
http://www.allconferences.com
http://www.conferencealerts.com

Evaluating the quality of research work

After publishing papers in the research journals one has to continuously evaluate the quality of the research work and try to improve the quality of the research papers by proper evaluation. For simplifying this task a researcher can make use of the mathematics reviews which can be accessed by the following websites
http://www.ams.org/mr-database
http://www.emis.de/ZMATH
http://www.emis.de/projects/JFM
Mathematical reviews mainly publish the comments on a published research paper, these comments are given by reviewers who are established researchers on the topic, and it evaluates whether the paper contains good results or not.
One having a good number of publications in internationally refereed journals can submit his/her thesis for Ph.D. It is not a good practice to submit a thesis if a researcher has not published atleast two research papers in internationally refereed journals as it will lead to a degradation of his/her research career.

What after Ph.D

After completing Ph.D in Mathematics one can either go for post-doctoral research or join some institutions as an Assistant Professor. Most of the research institutions mentioned above provide post-doctoral fellowships also. It will be good to have a post-doctoral experience atleast for two years which will enable one to have better opportunities. There are many newly started institutions and universities which have large number of openings. One should also try to go abroad for post-doctoral positions as it will help to acquaint with the research environment of foreign countries.

For career in Mathematics see the following websites
http://www.ams.org/careers
http://www.math-jobs.com

Some Useful Mathematics Resource Links

http://www.mathnews.net
http://www.math.usyd.edu.ac:8000/MathSearch.html
http://www.findtutorials.com
http://www.ams.org/mathmedia
http://www.genelogy.ams.org
http://dir.yahoo.com/Science/Mathematics/_Web-Directories/
http://www.ams.org/mathweb/mi-depts.html
http://www.bubl.ac.uk
http://www.math.fsu.edu/virtual/index.php
http://www.gnarlymath.com/gnarlink.html
http://www.mathworld.wolfram.com
http://www.psu.edu/MathLists/Softwares.html
http://www.en.wikipedia.org/wiki/Mathematics
http://mathpro.com/math/glossary/glossary.html
http://olympiads.win.ue.nl/imo
http://dir.yahoo.com/Sciences/Mathematics/Scientific_Notation
http://www.mathsoft.com/asolve/index.html
http://www.hoxie.org/math/title.htm
http://www.uni-boun.de/logic/world.html
http://www.siteforteachers.com/index15.html
http://www.gcalc.net
http://www.wombat.doc.ic.ac.uk
http://www.mathreference.com

Some Useful Mathematics Resource Links

http://www.mathmistakes.com
http://www.school.discovery.com/homeworkhelp/webmath
http://www.math.com/students/wonders/life/life.html
http://www.mathforum.org
http://www.mathsisfun.com
http://www.math.about.com
http://www.cut-the-knot.com
http://act.psy.cmu.edu/ACT/awpt
http://mathpuzzle.com
http://www.coolmath.com
http://www.paperfolding.com/math
http://www.coolmath4kinds.com
http://www.funmaths.com
http://www.algebrahelp.com
http://www.math.com
http://www.sosmath.com
http://www.gomath.com
http://www.mathpower.com/cartoon.htm
http://www.eb.com

WEB SITES

http://www.-groups.dcs.st-and.ac.uk/~history
http://www.dcs.warwick.ac.uk/bshm/index.html
http://www.-history.mcs.st.ac.uk/history/Quotations/index.html
http://www.eculid.ath.fsu.edu/Science/math.html
http://wims.unice.fr/~wims
http://www.math.upenn.edu
http://www.ufl.edu/math/math-web.html
http://www.archives.math.utk.edu
http://galaxy.einet.net/galaxy/science/mathematics.html
http://www.csc.fi/math_topics/General.html
http://www.felix.unife.it
http://elib.zib-berlin.de:88/Math-Net/Links/math.html
http://nearnet.gnn.com/gnn/wic/wics/sci.math.html
http://www.mathacademy.com
http://www.math.nist.gov
http://www.ams.org
http://dlmf.nist.gov
http://functions.wolfram.com
http://www.usief.org.in

About the author's research (Connection of Mathematics with Astrophysics)

The author started his research career by tackling a problem in Astrophysics. As we all know that thermonuclear reactions are the major source of energy in the entire universe. The energy in stars (like Sun) and galaxies are due to the thermonuclear reactions taking place in them. In a thermonuclear reaction, if suppose two particles are colliding with each other the major factors which affect the reaction are the reaction cross-section and the relative velocity of the particles. The author considered a non-resonant thermonuclear reaction. So far in the literature on thermonuclear reaction rates it is only the assumption that in hydrostatic equilibrium state the velocity distribution is Maxwell-Boltzmann. In an experimental situation it shows deviation from the Maxwell-Boltzmann situation. In this context one should be able to think of distributions in non-equilibrium situation also. This thought lead to the invention of a new distribution which is more general than the Maxwell-Boltzmann and by which one could extend the standard case. The use of the pathway model (a mathematical model introduced by Mathai in 2005) lead to the new energy density which reduces to Maxwell-Boltzmann by putting a particular value for a parameter. By this extended density one could cover the equilibrium as well as many unstable and chaotic situations. The integrals in the equation are solved by the techniques in applied analysis and obtained in closed forms. These results were also used to obtain the fusion yield integrals in the extended case. The obtained results establish connection of various special functions in Mathematics with the results in Astrophysics.

This research has further scope. One can look into the energy generation, luminosity, temperature, mass and pressure for the sun like stars by creating a new analytical model of the sun. Yet the parameter used to extend the results has to be suitably interpreted so that one will be able to explain more physical quantities in this connection.

Dr Mathai with the prize winners of INSPIRE projects for the schools of Idukki District, Kerala, India

Gwalior conference - group photo

Dr Mathai receiving memento from Professor S.P. Singh at Jaunpur conference

Inaugural session at Jaunpur conference

Professor Serge B. Provost, Professor A.M. Mathai and Professor Kiefer Ha at University of Western Ontario, London, Ontario, Canada on 16th March 2012

Linia Anie Sunny (new JRF at CMS)

Distinguished visitors to CMS
since the publication of Vol. 14, No.2, 2011

Professor Dr Jancy James, Vice-Chancellor of the Central University of Kerala (CUK), visited CMS on 28th January 2012.

Dr L. Jeyaseelan and Dr Saravanan from Vellore Medical College, Tamilnadu visited CMS on 10th February 2012, along with their two students. One of the students, now an Assistant Professor at Vellore Medical College, is Miss Tunny Sebastian, a former research scholar of CMS.

In the year 2011, Professor M.A. Pathan, visiting Scientist of CMS, Pala, has been honored by two distinguished service awards. First, during the 15th Annual Conference of the Vijnana Parishad (Society for Application of Mathematics) of India at DAV, PG College, University of Kanpur and second during a National Conference on works of Ramanujan at T.D. College, Purvanchal University, Jaunpur.

VIJÑĀNA PARISHAD OF INDIA

Society For Applications of Mathematics

(Registered under the Societies Registration Act XXI of 1860)

OFFICE : DAYANAND VEDIC POSTGRADUATE COLLEGE, ORAI-285001, U.P., INDIA

Distinguished Service Award

Couleur De Rose

VIJÑĀNA PARISHAD OF INDIA as Affaire d' Honneur Has Great Pleasure in Honoring

PROFESSOR M.A. PATHAN

by giving him DISTINGUISHED SERVICE AWARD for his Outstanding Contribution and Distinguished Services Rendered to his Subject, VIJÑĀNA PARISHAD OF INDIA and/or National Development at the Occasion of Inaugural Function of 15th Annual Conference of VPI (November 04-06, 2011) held at

D.A-V. POSTGRADUATE COLLEGE, KANPUR, U.P., INDIA

On November 04, 2011

(S.L. Singh) President | (Nagendra Swaroop) Chief Patron of the Conference | (Rekha Sharma) Patron of the Conference | (H. Kumar) Organizing Secretary of the Conference | (R.C. Singh Chandel) Secretary

NATIONAL CONFERENCE ON "RAMANUJAN'S WORK IN THE FIELD OF HYPERGEOMETRIC SERIES AND ITS APPLICATIONS"

December 4 – 6, 2011

Department of Mathematics, T.D.P.G. College, Jaunpur (U.P.) India

CITATION

Professor M. A. Pathan started his career as a Lecturer in the department of Mathematics, Aligarh Muslim University, in 1968 and became Professor of Mathematics in 1993. He has served as the Chairman, Department of Mathematics, Aligarh Muslim University, and Coordinator, Department of Special Assistance (U.G.C.) from 1999 to 2002. He has held faculty positions at University of Dereselam, Tanzania, Alfateh University, Tripoli, Libya and University of Botswana, Gaborone, Botswana. Presently, he is a Visiting Scientist, Department of Science and Technology, Center for Mathematical sciences, Pala, Kerala, India.

He has been President of Indian Mathematical Society, President (Section of Mathematical Sciences), Indian Science Congress Association, President of Bharat Ganit Parisad and Vice- President of Gwalior Academy of Mathematical Sciences. He is general secretary of Society for Special Functions and their Applications. He has been visiting Professor at many Indian Universities including Department of Pure Mathematics, University of Calcutta, Kolkata, A.P.S.University, Rewa.(M.P), University of Burdwan, Burdwan, (W.B.) and taught at Central University of Kerala, Kasergod (Kerala).

He has supervised 13 Ph.D's in Integral operators, Lie theory and Special Functions. In addition to over 145 research papers, Professor Pathan has written 4 books and edited a number of Proceedings of International Conferences. He has delivered the "Thirteenth Ramanujan Award Lecture" organized by Indian Mathematical Society in 2003. He has visited over 40 countries and has been member of Academic Board of Al-Ghurair University, Dubai.

His many contributions to Mathematics include collaborated work and lectures on Lie algebra and Special Functions at University of Western Ontario, London, Canada and International Centre for Theoretical Physics, Trieste, Italy. He delivered an invited talk and chaired a session at the 4th Congress of the International Society of Analysis, Application and Computation (ISAAC) held at York University, Toronto, Canada in 2003.He was Chief guest at the First International Conference on Mathematical Sciences, Zarqa Private University, Zarqa, Jordan in 2006. He has delivered invited talks at University of Haifa, Israel, International conference on Mathematics and its applications, Kuwait foundation for the advancement of science, State of Kuwait (2004) and International conference on Mathematics, Yarmouk University, Irbid, Jordan (2004).

Recently, in 2011, Vijnana Parisad of India has honoured him with award for distinguish services in the field of Mathematical Sciences. He has published several articles on popular science and History of Mathematics and was widely acclaimed for his articles 'Alkhwarizmi' and 'Lilawati' which are most cited and referred in the field of history of mathematics. These articles are translated into number of foreign languages.

He has made contributions to several areas of mathematics. His most cited work on generalized Voigt function played an important role in many situations of pure and applied mathematics and also in physical and quantum chemical applications. He has developed the ideas to generalize various Ramanujan's theorems on hypergeometric series. His earlier most significant work was on Integral Operators, Fractional Calculus and generalized functions. Afterwards he started working on Lie theory and Special Functions and their applications.

In view of his contributions in Mathematics, this National Conference on Ramanujan's Mathematics confers upon him "THIS CITATION", on December 4, 2011 at Balrampur Hall of T.D.P.G. College, Jaunpur (U.P.) India.

Prof. Sunder Lal, Vice-Chancellor, VBS Purvanchal University, Jaunpur (U.P.) India | Dr. U. P. Singh, Principal, T.D.P.G. College, Jaunpur (U.P.) India | Dr. S. P. Singh, Organizing Secretary, Department of Mathematics, T.D.P.G. college, Jaunpur, (U.P.) India

Dr Ashutosh Shukla, visiting faculty at CMS

Dr Deepa H. Nair, visiting faculty at CMS

Solar Neutrino Records: Gauss or Non-Gauss is the Question

A. Haubold, H.J. Haubold,
and D. Kumar

Professors K. Sakurai (Japan),
H.J. Haubold (UN/Germany), C. Tsallis (Brazil/US),
A.M. Mathai (Canada/India)

Professors H.J. Haubold (UN/Germany),
C. Tsallis (Brazil/US), A.M. Mathai (Canada/India),
K. Sakurai (Japan)

Introduction

Photos 1 and 2 are showing a group of physicists and mathematicians discussing the possible signature of variation of the solar neutrino flux over time in the records of solar neutrino experiments and the relation of such a signature, if discovered, to non-equilibrium statistical mechanics as developed by Tsallis [1, 10] and to entropic pathway as introduced by Mathai [4]. Spatio-temporal analysis of solar activity and possible correlation to the variation of the solar neutrino flux, as reported in the literature, were also discussed [11]. The photos were taken during the UN/ESA/NASA/JAXA workshop for the preparation of the International Heliophysical Year 2007, Abu Dhabi and Al-Ain, United Arab Emirates, 20-23 November 2005 [9]. This article reports some of the progress in the discussions made since then.

Time Series: Variance Versus Probability Density Function

Time series are recording the evolution of a parameter over time and commonly exhibit stochastic fluctuations of the recorded parameter if the underlying process is random. Traditional methods for the study of scaling exponents of such time series like standard deviation analysis and spectral analysis (Fourier, wavelet) are based upon the analysis of the variance of the time series [6,7].

The statistical variability in the average solar neutrino flux is interpreted as noise (see Fig. 1). The solar neutrino flux fluctuations are thought to contain no useful information and are consequently smoothed and show a constant average in the long time. According to the central limit theorem, the statistics of the fluctuations in such time series, emanating from complex systems such as the gravitationally stabilized solar fusion reactor, are assumed to be Gaussian. The fact that they may not, due to the fact of being generated by an open system, remains unexplained. However, suspected non-Gaussian behavior prompted studies of possible time variation of solar neutrino records as a problem belonging to non-equilibrium statistical mechanics wherein statistical fluctuations can provide useful information about, for example, the reaction and diffusion properties of complex phenomena. An example would be the fluctuation-dissipation theorem, in which the response of a complex system to a perturbation is determined by the complex system's unperturbed autocorrelation function. The variation of the solar neutrino flux would be indicative of the Sun's complex internal dynamics as evidenced by changes in the number of detected solar neutrinos. Such studies maintain that the variations in the solar neutrino flux detected on Earth are not noise, but contain substantial information about the source of variability, particularly the

variations in the gravitationally stabilized solar fusion reactor, beyond neutrino oscillations [8].

Different from standard deviation analysis (SDA), Scafetta's method of diffusion entropy analysis (DEA) evaluates, under certain conditions, the scaling exponent of the probability density function (pdf) through the Shannon's entropy (or Tsallis entropy, or Mathai's pathway) of the diffusion process generated by the fluctuations exhibited by the time series [7], such as shown in Fig.1. The application of DEA shows that the fluctuations in the solar neutrino record may have inverse power-law statistical distributions. Specifically, if x is the solar neutrino flux, the distribution of the values of neutrino fluxes is an inverse power law $P(x) \sim C/x^{\alpha}$, where C is a normalization constant. The parameter α is the inverse power-law index. The scaling of the solar neutrino record was tested by randomly changing the order of the data points. If the time series were internally correlated, the resulting distribution would have changed from the original, but that did not happen. The invariance of the distribution under shuffling indicates that the statistics of the time series in non-Poisson and renewal, meaning that with the generation of each new event, the process is renewed [12].

Diffusion: Gauss Versus Lévy Statistics

The statistics of the solar neutrino record is described by a non-Gaussian distribution. The behavior of such limit distributions requires a generalization of the central limit theorem to the case in which the second moment of the variate diverges. Such processes were studied by Lévy. The solar neutrino record is shown to be describable by such a Lévy distribution.

The diffusion process, as utilized in Scafetta's DEA, is modeled as a continuous-time random walk where a random walker jumps instantaneously from one location in space to another following a waiting period on a location whose duration is drawn from a pdf of waiting times [5, 12]. Depending on the rules of walking in space and jumping over time, pdf's of the diffusion process show Gaussian behavior or can be represented by Lévy-type flights or Lévy-type walks [3]. Such pdf's can be derived from Mathai's entropic pathway. In Mathai's pathway model, a specific parameter allows to proceed from probability densities of a generalized type-1 beta model to a generalized type-2 beta model to a generalized gamma model when the variable is restricted to be positive [4].

Taking into account correlations (memory), deviation from Gaussian behavior can be described by application of fractional derivatives in space and time. The diffusion process can be extended to a reaction-diffusion process if the species are not only mobile in space and time but are also allowed to react with each other [4]. In this case, diffusion, i.e. random walk of reactants, is the mechanism that allows for reaction, in more general terms described by fractional reaction-diffusion equations. Closed-form representations of such equations, reflecting non-Gaussian behavior, are achieved by utilizing Mittag-Leffler functions and H-functions [2,4].

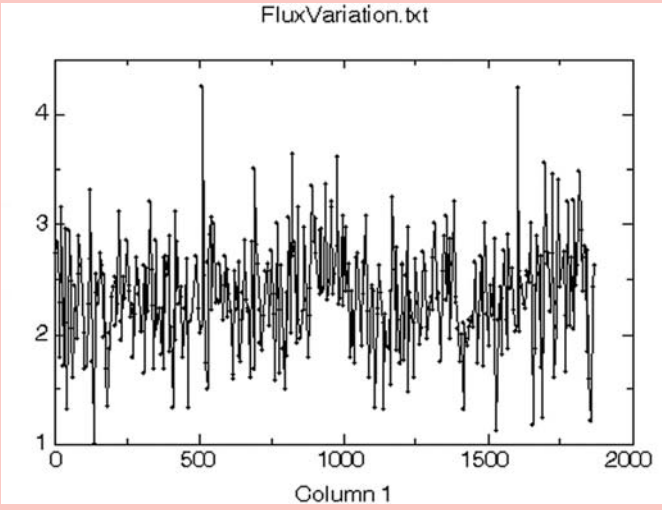


Figure 1: The horizontal axis is time (1997-2002) from the beginning of the data taking and the vertical axis is the measured neutrino flux in units of 10^6 cm^{-2} s^{-1}. The $1/R^2$ correction is included in the measured solar neutrino flux of 5-day-long samples from Super-Kamiokande-I [13]. It is commonly assumed that this record of data does neither contain a trend nor a periodicity. The average value of the record confirms the expected average solar neutrino flux based on a standard solar model.

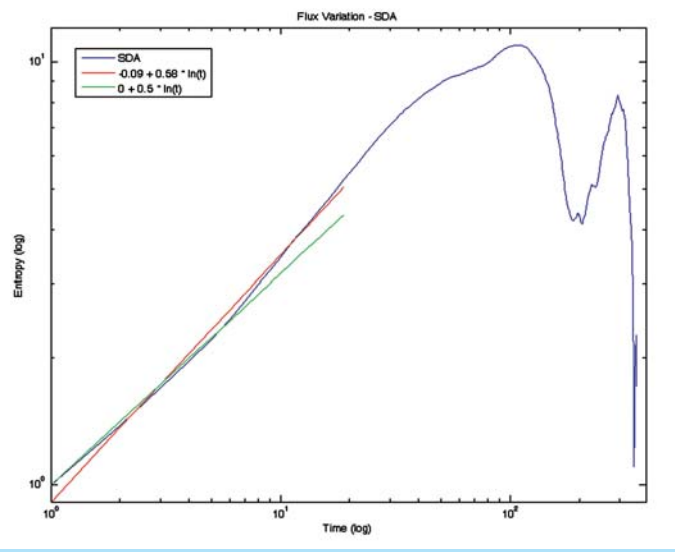


Figure 2: In the SDA (blue line) one examines the scaling properties of the second moment of the diffusion process generated by the time series as shown in Figure. 1. The standard deviation D(t) of the variable x is $D(t) = (<x^2,t> - <x,t>^2)^{1/2} \sim t^H$. The HURST exponent H is interpreted as the scaling exponent being evaluated from the gradient of the fitted straight line in the log-log plot of D(t) over diffusion time t.
In the Figure, the Hurst exponent of H=0.58 for the red straight line does indicate a deviation from Gauss. Also shown in green is the line for H=0.5.

References

[1] C. Beck: Generalized statistical mechanics for superstatistical systems. *Philosophical Transactions of the Royal Society* **A 309** (2011), 453-465.

[2] H.J. Haubold, A.M. Mathai and R.K. Saxena: Mittag-Leffler functions and their applications. *Journal of Applied Mathematics*, Volume 2011, Article ID 298628, 51 pages.

[3] J. Klafter and I.M. Sokolov: *First Steps in Random Walks: From Tools to Applications*. Oxford University Press, New York, 2011.

[4] A.M. Mathai, R.K. Saxena and H.J. Haubold: *The H-Function: Theory and Applications*. Springer, New York, Dordrecht Heidelberg, London, 2010.

[5] R. Metzler, S.C. Lim and J. Klafter (Eds.) : *Fractional Dynamics: Recent Advances*. World Scientific, Singapore, 2011.

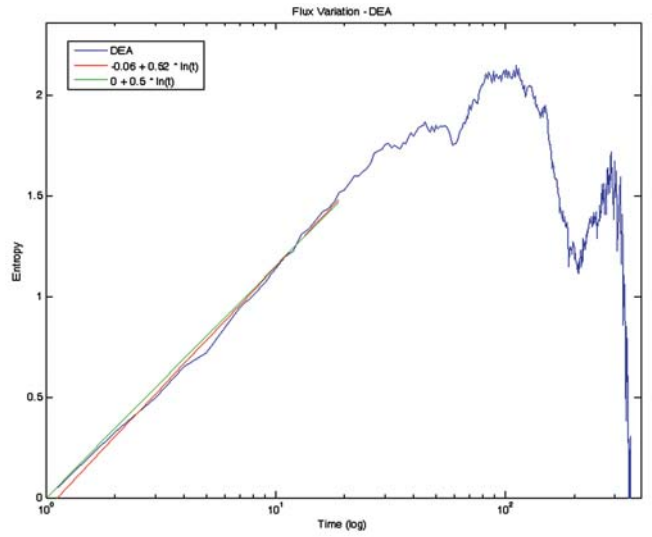


Figure 3: The DEA determines the scaling exponent delta evaluated through the Shannon entropy S(t) of the diffusion process generated by the variation of the time series in Figure. 1. The probability density function p(x, t) is determined by means of the sub-trajectories $X_n(t) = Ó^{l}_{i=0}$ î$_{i+n}$, n = 0, 1, … . If the scaling condition $p(x,t) = (1/t^{ä}) F(x/t^{ä})$ is valid, the corresponding entropy increases over time as $S(t) = - \int_{-\infty}^{+\infty} dx\ p(x,t)\ \ln[p(x, t)]$. Using again the scaling condition for p(x,t) one obtains S(t) = A + ä ln(t). With $A = \int_{-\infty}^{+\infty} dy F(y) \ln[F(y)]$ = constent, where $y = x/t^{ä}$. This indicates that in the case of a diffusion process with a scaling probability distribution, its entropy S(t) increases linearly with ln(t). The scaling exponent ä is being determined from the gradient of the fitted straight line in the linear-log plot of S(t) over time t. For fractional Brownian motion the scaling exponent ä coincides with the Hurst exponent H. For random noise with finite variance, the probability density function p(x, t) will converge, according to the central limit theorem, to a Gaussian distribution with H = ä = 0.5 . If the Hurst exponent H is different from the scaling exponent ä, the scaling represents anomalous behavior. The diffusion process characterized by Levy flights belongs to anomalous diffusion. In this specific case the scaling condition for p(x,t) is still valid but the variance is not finite and the variance scaling exponent cannot be defined. A second type of anomalous diffusion is due to Lévy walk based on a generalization of the central limit theorem. In this case of anomalous diffusion, the second moment is finite and the exponents H and delta obey the relation ä = 1/(3 - 2H).

In the Figure, the scaling exponent of ä = 0.52 for the red straight line does indicate a deviation from Gauss. Also shown in green is the line for ä = 0.5.

[6] K. Sakurai : *From the Solar Neutrino Problems to the Ultimate Structure of Matter*. Book publication in Japanese (English translation in preparation), Tokyo 2010.

[7] N. Scafetta: *Fractal and Diffusion Entropy Analysis of Time Series: Theory, concepts, Applications and Computer Codes for Studying Fractal Noises and Levy Walk Signals*. VDM Verlag Dr Mueller, Saarbruecken 2010.

[8] A. Yu. Smirnov: The MSW effect and solar neutrinos. in Tenth International Workshop on Neutrino Telescopes (Ed. M.B. Ceolin), Vol. I, 2003, Venezia, Marh 11-14, 2003, Istituto Veneto di Scienze, Lettere ed Arti, Campo Santo Stefano, edizioni papergraf, pp. 23-44.

[9] B.J. Thompson, N. Gopalswamy, J.M. Davila and H.J. Haubold: *Putting the "I" in IHY: The United Nations Report for the International Heliophysical Year 2007*. Springer Verlag, Wien, New York 2009.

[10] C. Tsallis: *Introduction to Nonextensive Statistical Mechanics: Approaching a Complex World*. Springer, New York 2009.

[11] A. Vechhio and V. Carbone: Spatio-temporal analysis of solar activity: main periodicities and period length variations. *Astronomy and Astrophysics,* **502** (2009) 981-987.

[12] A. Vechhio, M. Laurenza, V. Carbone and M. Storini: Quasi-biennial modulation of solar neutrino flux and solar and galactic cismic rays by solar cyclic activity. *Astrophysical Journal Letters,* **709** (2010) L1-L5.

[13] B.J. West and P. Grigolini: *Complex Webbs: Anticipating the Improbable*. Cambridge University Press, Cambridge 2011.

[14] J. Yoo et al.: Search for periodic modulations of the solar neutrino flux in Super-Kamiokande-I. *Physical Review,* **D 88** (2003) 092002.

List of publications of Professor R.K. Saxena for the past few months

1. Further results on generalized Mittag-Leffler functions of fractional calculus. *Journal of fractional calculus*, **39** (2011), 29-41 (with K. Nishimoto).

2. Integral and computational representations of the extended Hurwich-Lerch zeta function. I*ntegral Transforms and Special Functions*, **22 (7)** (2011), 487-506 (with H.M. Srivastava, Tibor K. Pogany and Ravi Saxena).

3. On a multivariate analogue of generalized Mittag-Leffler-function. *Integral Transforms Special Functions*, **22(7)** (2011), 533-548 (with S.L. Kalla and Ravi Saxena).

4. Exact solutions of triple order time-fractional differencial equations for anomalous relaxation and diffusion: The accelerating case. *Physica A*, **390** (2011), 602-613 (with G. Pagnini).

5. Inequalities associated with Cebysév functional for Saigo fractional integration operator. *Integral Transforms Special Functions,* **22 (9)** (2011), 671-680 (with J.Ram, Tibor K. Pogany and J. Daiya).

Prajitha P.

INSPIRE Fellowship for PRAJITHA P.

Prajitha P. (DST-JRF at CMS) is awarded DST's INSPIRE Fellowship for first-rank holders. Prajitha is the first-rank holder of Calicut University in M.Sc Statistics in 2009. This fellowship carries a monthly stipend at the rate of UGC fellowship + contigency and other allowances. The fellowship is for 5 years.

MEDIA POTRAIT

Indian Express

Wins Second Prize in Research Meet

Kottayam: Prajitha P of Centre for Mathematical Sciences, Pala, has won the second prize for her paper presented at a national meet of research scholars in mathematical sciences held at IIT, Kharagpur, recently. ENS

दैनिक भास्कर

...नियरिंग कॉलेज में दो दिवसीय राष्ट्रीय स...

...क्षा के सभी क्षेत्रों में बढ़ी गणित की महत्ता

बीकानेर | मरुधर इंजीनियरिंग कॉलेज में 'प्रोमोटिंग दा एप्लीकेशन ऑफ मैथेमेटिक्स इन इंजीनियरिंग एण्ड टेक्नोलॉजी-2010' विषयक दो दिवसीय राष्ट्रीय सम्मेलन शुक्रवार को शुरू हुआ।

सम्मेलन में मुख्य अतिथि महाराजा गंगासिंह विश्वविद्यालय के कुलपति डॉ. गंगाराम जाखड़ ने कहा कि इंजीनियरिंग के सभी क्षेत्रों में गणित महत्वपूर्ण स्थान है। उन्होंने कहा कि शिक्षा के सभी क्षेत्रों में गणित की महत्ता बढ़ती जा रही है। चाहे विज्ञान हो, कम्प्यूटर हो या फिर ...योटेक्नोलॉजी हो। प्रो. ए. एम. ... ने प्रोबेबिल्टी एण्ड एप्लाइड ...स जैसे विषय पर प्रकाश ... इंस्टीट्यूट के ...धिकारी ने भी ...विता

सम्मेलन : मरुधर इंजीनियरिंग कॉलेज में आयोजित सेमिनार को संबोधित करते अतिथि।

चौधरी, प्रो. सीबी. गुप्ता, प्रो. डीसी गोस्वर, योगेश शर्मा, डॉ. पूर्णिमा, राकेश कुमार आदि ने विचार प्रकट किए। आरंभ में प्राचार्य डा. आरपी एस जाखड़ ने देशभर से आए 100 ... से भी अधिक गणितज्ञों का ... किया। कार्यक्रम की ... उज्जवल पांडे ने ... शनिवार को ...

ദീപിക

ദിലീപ് കുമാറിന് യുവശാസ്ത്ര അവാർഡ്

പാലാ: സെന്റ് തോമസ് കോളജ് കാമ്പസിൽ പ്രവർത്തിക്കുന്ന സെന്റർ ഫോർ മാത്തമാറ്റിക്കൽ സയൻസസിലെ ഗവേഷകൻ ദിലീപ് കുമാറിന് മികച്ച ശാസ്ത്ര പ്രബന്ധാവതരണത്തിനുള്ള അവാർഡ് ലഭിച്ചു. കാൺപൂർ ഐ.ഐ.ടിയിൽ ഡിസംബർ ആറു മുതൽ 10 വരെ നടന്ന ഗണിത ശാസ്ത്ര യുവഗവേഷകർക്കുള്ള പ്രബന്ധാവതരണ മത്സരത്തിൽ ദിലീപ്കുമാർ അവതരിപ്പിച്ച 'ജനറലൈസേഷൻ ഓഫ് ക്രട്സൽ ഫംഗ്ഷൻസ് യൂസിംഗ് പാത്ത്‌വെ മോഡൽ' എന്ന ഗവേഷണ പ്രബന്ധത്തിനാണ് അവാർഡു ലഭിച്ചത്.

കഴിഞ്ഞ ജൂലൈയിൽ കാനഡയിലെ മോൺട്രിയായിൽ നടന്ന 'കോസ്പാർ 2008' അന്താരാഷ്ട്ര ...

മാധ്യമം

ദിലീപ് കുമാറിന് യങ് സയൻറിസ്റ്റ് അവാർഡ്

കോട്ടയം: മികച്ച യുവ ഗവേഷകനുള്ള ഇന്ത്യൻ ശാസ്ത്ര കോൺഗ്രസിൻെറ യങ് സയൻറിസ്റ്റ് അവാർഡ് പാലാ സി.എം.എ സിലെ ഗവേഷക വിദ്യാർഥിയായ ദിലീപ് കുമാർ കരസ്ഥമാക്കി.

25,000 രൂപയും പ്രശസ്തിപത്രവുമടങ്ങുന്നതാണ് അവാർഡ്. ഗവേഷണ പ്രബന്ധങ്ങളുടെയും ഒക്ടോബറിൽ ഭുവനേശ്വറിൽ കെ.ഐ.ഐ.ടി യൂനിവേഴ്സിറ്റിയിൽ അവതരിപ്പിച്ച 'പാത്ത്‌വേ മോഡൽ ആൻഡ് ഇറ്റ്സ് ആപ്ലിക്കേഷൻസ് ഇൻ റിയാക്ഷൻ റേറ്റ് തിയറി ഇൻ അസ്ട്രോഫിസിക്സ് ആൻഡ് അപ്ലൈഡ് അനാലിസിസ്' എന്ന പ്രബന്ധത്തിൻെറയും അടിസ്ഥാനത്തിലാണ് തെരഞ്ഞെടുത്തത്. ജനുവരി മൂന്നിന് ഭുവനേശ്വറിൽ നടക്കുന്ന ഇന്ത്യൻ സയൻസ് കോൺഗ്രസ് സമ്മേളനത്തിൽ മുൻ രാഷ്ട്രപതി എ.പി.ജെ. അബ്ദുൽ കലാം പുരസ്കാരം സമ്മാനിക്കും. ചങ്ങനാ...

ജന്മഭൂമി

യങ് സയന്റിസ്റ്റ് അവാർഡ് ദിലീപ് കുമാറിന്

കോട്ടയം: അന്താരാഷ്ട്ര ഭൗതികശാസ്ത്ര അക്കാദമിയുടെ ഗണിതശാസ്ത്രത്തിനുള്ള ഈ വർഷത്തെ യങ് സയന്റിസ്റ്റ് അവാർഡ് ദിലീപ്കുമാർ നേടി. ...

മംഗളം

യങ് സയന്റിസ്റ്റ് അവാർഡ് ദിലീപ്കുമാറിന്

കോട്ടയം: ഗണിതശാസ്ത്ര രംഗത്തെ മികച്ച യുവഗവേഷകനുള്ള ഇന്ത്യൻ ശാസ്ത്ര കോൺഗ്രസിന്റെ യംഗ് സയന്റിസ്റ്റ് അവാർഡ് പാലാ സെന്റർ ഫോർ മാത്തമാറ്റിക്കൽ സയൻസസ് (സി.എം.എസ്.)ലെ മു... തിർന്ന ഗവേഷക വിദ്യാർഥിയായ ദിലീപ്കുമാറിന്. ചങ്ങനാശേരി മലകുന്നം...

മലയാള മനോരമ

കണക്കുകൂട്ടൽ തിരുത്തി ദിലീപ്

ഗണിതശാസ്ത്രം പഠിച്ചാൽ എവിടെവരെയെത്താം? സ്കൂൾ അധ്യാപകൻ, അല്ലെങ്കിൽ കോളജ് പ്രഫസർ എന്നായിരിക്കും പതിവ് ഉത്തരം. ഈ ധാരണ തിരുത്തുകയാണ്, ദേശീയ യുവശാസ്ത്ര പുരസ്കാരം നേടിയ മലയാളി ദിലീപ് കുമാർ.

MEDIA POTRAIT

THE HINDU

KERALA

February 6, 2011 00:00 IST | Updated: February 6, 2011 04:12 IST

...ms Indian Mathematical Society award

Staff Reporter

Dilip Kumar, who hails from Changanassery, has won the IMS Prize in Mathematics of the Indian Mathematical Society for the year 2010.

Mr. Kumar was presented with the award at the annual conference of the Indian Mathematical Society held recer ...he S.V. National Institute for Technology, Surat, for his research paper 'Closed forms of extended thermonuc ...ion rates using generalised special functions and its implications'. He has also been the recipient of t ...rd for the year 2010 of the International Academy of Physical Sciences, Allahabad.

വനിത

മികച്ച ശാസ്ത്ര പ്രബന്ധാവതരണത്തിന് അഖിലേന്ത്യാതലത്തിൽ അവാർഡ് നേടിയ പി. പ്രജിത. പാലാ സെന്റർ ഫോർ മാത്തമാറ്റിക്കൽ സയൻസിൽ ഡിഎസ്ടി മേജർ പ്രോജക്ട് ജൂനിയർ ഫെലോ. പാലക്കാട് പുതുക്കോട്ടിൽ ബാലഗംഗാധരൻനായരുടെയും സീതാലക്ഷ്മിയുടെയും മകൾ.

മാതൃഭൂമി

ദിലീപ്കുമാറിന് ഇന്ത്യൻ ഗണിതശാസ്ത്ര സൊസൈറ്റിയുടെ പുരസ്കാരം

ദിലീപ്കുമാർ

കോട്ടയം: ഇന്ത്യൻ ഗണിതശാസ്ത്ര സൊസൈറ്റിയുടെ 2010-ലെ ഗണിതശാസ്ത്ര പുരസ്കാരം ചങ്ങനാശ്ശേരി സ്വദേശിയും പാലാ സെൻറർ ഫോർ മാത്തമാറ്റിക്കൽ സയൻസസിലെ ഗവേഷണ വിദ്യാർഥിയുമായ ദിലീപ് കുമാറിന്.

സൂറ്റിലെ സർദാർ വല്ലഭായി പട്ടേൽ നാഷണൽ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജിയിൽ നടന്ന, അന്താരാഷ്ട്ര ഗണിത ശാസ്ത്ര സൊസൈറ്റിയുടെ വാർഷിക സമ്മേളനത്തിലാണ് ദിലീപ്കു

മലയാള മനോരമ

...രാഷ്ട്ര സ്റ്റാറ്റിസ്റ്റിക്സ് കോൺഫറ...
...ഹാൻസ് ജെ. ഹൊബോ...

മലയാള മനോരമ

യങ് സയന്റിസ്റ്റ് അവാർഡ്

ദിലീപ് കുമാർ.

കോട്ടയം: ഗണിതശാസ്ത്രരംഗത്തെ മികച്ച യുവഗവേഷകനുള്ള ഇന്ത്യൻ ശാസ്ത്ര കോൺഗ്രസിന്റെ യങ് സയന്റിസ്റ്റ് അവാർഡ് (25,000 രൂപ) പാലാ സെന്റർ ഫോർമാത്തമാറ്റിക്കൽ സയൻസിലെ ഗവേഷക വിദ്യാർഥിയായ ദിലീപ്കുമാർ കരസ്ഥമാക്കി. ജനുവരി മൂന്നു മുതൽ ഏഴു വരെ ഭുവനേശ്വർ കെഐഐടി യൂണിവേഴ്സിറ്റിയിൽ നടക്കുന്ന ഇന്ത്യൻ സയൻസ് കോൺഗ്രസിന്റെ ഉദ്ഘാടന സമ്മേളനത്തിൽ മുൻ രാഷ്ട്രപതി ഡോ. എ.പി.ജെ. അബ്ദുൽ കലാം പുരസ്കാരം സമ്മാനിക്കും.

ദേശാഭിമാനി

അഖിലേന്ത്യാ തലത്തിൽ മികച്ച ശാസ്ത്ര പ്രബന്ധാവതരണത്തിനുള്ള അവാർഡ് നേടിയ സെന്റർ ഫോർ മാത്തമാറ്റിക്കൽ സയൻസിലെ ഗവേഷക പി പ്രജിത. പാലക്കാട് പുതുക്കോട്ടിൽ ബാലഗംഗാധരൻ നായരുടെയും സീതാലക്ഷ്മിയുടെയും മകളാണ്

വീക്ഷണം

Progressive National Daily

...ശാസ്ത്ര കോൺഗ്രസിനോ...

...യന്റിസ്റ്റ് അവാർഡ് ദിലീപ്കുമാറിനു...

...കോട്ടയം: ഗണിതശാസ്ത്ര ...ംഗത്തെ മികച്ച യുവഗവേഷക ...നുള്ള 2011-2012 വർഷത്തെ ...ന്ത്യൻ ശാസ്ത്ര കോൺഗ്രസിന്റെ ...മങ്ങ് സയന്റിസ്റ്റ് അവാർഡ് പാലാ ...സൻർ ഫോർ മാത്തമാറ്റിക്കൽ ...യൻസസിലെ മുതിർന്ന ഗവേ ...ഷക വിദ്യാർത്ഥിയായ ദിലീപ്കു ...ാർ കരസ്ഥമാക്കി. 25,000 രൂപയും ...പശസ്തി പത്രവും അടങ്ങുന്ന ...ൗ അവാർഡ് ഐ.ഐ.ടി ഖര ...പുറിലെ ഒരു ഗവേഷകനുമായി ...ീപ്കുമാർ പങ്കുവച്ചു. ...012 ജനുവരി 3 മുതൽ 7 വരെ ...ർ കെ.ഐ.ഐ.ടി. യൂണി ...ിൽ നടക്കുന്ന ഇന്ത്യൻ സയൻസ് കോ... ...ളനത്തിൽ മുൻ രാഷ്ട്രപതി ...കാരം സമ്മാ...

THE TIMES OF INDIA

Information and Communication Science and Technology (including Computer Sc...
Debarati Chakraborty, *ISI., Kolkata*

Materials Science: **Ashutosh Kumar Dubey**, *IIT, Kanpur*

Mathematical Sciences (including Statistics): **Dilip Kumar**, Senior Research Fell... Centre for Mathematical Sciences, Pala, Kerala and Suchandan Kayal, Department ... Mathematics, IIT, Kharagpur.

Medical Sciences (including Physiology): **Rajender Singh**, *Central Drug Researc... Lucknow*

NEWS FROM OTHER CAMPUSES

1a. Department of Mathematics, Central University of Kerala, Kasaragod, Kerala, India (CUK)

[Dr A.M. Mathai, Director, CMS, is currently coordinating the Mathematical Sciences program at CUK and Dr Arjun K. Rathie is currently acting as the Head of the Department of Mathematics at CUK. Advertisement will be placed and regular faculty will be appointed soon. Currently the courses are being run by resource persons].

Resource persons

This postgraduate department of mathematics came into existence in July 2011. The following resource persons gave the following five courses during the first semester. Differential Equations (Dr Arjun K. Rathie), Linear Algebra (Dr M.P. Prasad), Complex Analysis (Dr M.A. Pathan), Numerical Analysis (Dr Deepa H. Nair), Integral Transforms (Dr Arjun K. Rathie). The first semester examinations were over on 25th November 2011. Just after the completion of the first semester, during 26th November 2011 to 21st December 2011, we have organized one seminar in the department. All the 20 students participated and presented materials on topics of their own choice. Each student was given 30 minutes for her/his presentation. The progress of almost all the students was satisfactory. The following students performed excellently: Pranisha V.N., Deepa A., Deepa K., Prajisha E., Shameema P.E., Harishree N. Nair, Sheeba R.

Paper published

Dr Arjun K. Rathie published one paper titled **"On an extension of a quadratic transformation formula due to Gauss"** in the **International journal of Mathematical Modeling & Computations**, 1(3) (2011), 171-174.

Dr Arjun K. Rathie has been invited by Professor Junesang Choi of the Dongguk University, Gyoungju, South Korea for collaborating on a Korean Research Project. For this purpose, he visited South Korea for 20 days and wrote a few research papers jointly with Professor Junesang Choi. The same are being sent for publication. Dr Rathie has also received an invitation to visit the same university in the next year 2013. During his visit, he delivered a 50-minute talk on "Two formulas contiguous to a quadratic transformation due to Kummer with an application" in the 2012 Winter Seminar on Complex Analysis and Special Functions on February 2, 2012.

As the year 2012 has been declared as Ramanujan Year, so the department is planning to organize a 2 or 3 days Seminar/Symposium just after the completion of the second semester.

Dr J. Choi and Dr A.K. Rathie at Dongguk University, South Korea

First batch of M.Sc (Maths) students at CUK

1b. Department of Physics, Central University of Kerala, Kasaragod, Kerala, India (CUK)

The department of physics has completed almost two years of functioning, and by the end of May, 2012, the first batch of M.Sc students shall come out of the University. The first batch of M.Phil. is also proceeding to completion. The department has 15 students in the first batch of M.Sc and 13 in the second batch and 6 students in the M.Phil programs.

Dr Vincent Mathew
Associate Professor,
Head, Department of Physics,
and
Dean, School of Mathematical and Physical Sciences of CUK

Dr E. Prasad,
Assistant Professor
Department of Physics, CUK

Dr Subasa Chandra Sahoo,
Assistant Professor
Department of Physics, CUK

The department of physics has been functioning in the riverside campus at Padennakad, from 2010 onwards. Dr Vincent Mathew, Dr E. Prasad and Dr Subasa Chandra Sahoo joined as the permanent faculty in September 2011. Dr Vincent Mathew, Associate Professor, was appointed as the Head of the Department of Physics and the Dean of the School of Mathematical and Physical Sciences.

The thrust areas of the department are Theoretical Condensed Matter Physics, Photonics, Nuclear Physics and Magnetic Materials and Applications.

Department conducted a One-day Workshop On Computer Interfaced Physics Experiments in collaboration with Inter-University Accelerator Centre, New Delhi on 15th December 2011. Dr. B. P. Ajith Kumar (Senior Scientist, IUAC), Professor K. M. Varier (Kerala University) and Mr Sujeevan handled the sessions.

Dr Vincent Mathew inaugurated the Physics Association at St Pius College Rajapuram and Nehru Arts and Science College Padennakad. Dr Vincent Mathew and Dr E. Prasad delivered lectures in the workshop.

The department is organising a two-day hands-on workshop on modern methods in physics experiments to higher secondary school teachers and students. This programme will be conducted in the second week of March, 2012.

The faculty members have published several papers, after they have joined the University, to a total number of 8 in international Journals of repute.

Recent publications of the faculty

1. Jolly Andrews and Vincent Mathew (2011): Numerical study of vortex effects in superconducting microstrip line. *Physica*, **C 471**, 338-343.

2. Anju Babu, C. Bhagyaraj, Gishamol Mathew and Vincent Mathew (2011): Dispersion of plasmon polaritons guided by a metal film of finite width deposited on a uniaxial substrate. *J. Phys. D: Appl. Phys.*, **44**, 335301.

3. Jesly Jacob, Ajith R, and Vincent Mathew (2011): Simulation of surface plasmon resonance in silver shell nanocylinders arranged in triangular geometry. *Applied Optics,* (to appear).

4. Jolly Andrews and Vincent Mathew (2012): Field dependent characteristics of superconducting microstrip resonators in mixed state. *Supercond. Sci. Tech.*, **25**, 025004 (to appear).

5. Gishamol Mathew, Bhagyaraj C, Anju Babu, and Vincent Mathew (2012): Effect of gyrotropic substrates on the surface plasmon polaritons guided by metal films of

finite width. *IEEE Journal of Lightwave Technology*, **30(2)**, 273.

6. Anju Babu and Vincent Mathew (2012): Surface plasmon propagation in metal nanostrip waveguides with anisotropic substrates. *ICTP Winter Conference on Optics*, ICTP, Trieste, February (2012).

7. Jesly Jacob and Vincent Mathew (2012): Modelling of near field effects for nano waveguide applications. *ICTP Winter Conference on Optics*, ICTP, Trieste, February (2012).

8. D. R. Mohapatra, H.J.Lee, S. Sahoo and W.S. Lee (2012): A novel structure of tungsten carbide nanowalls grown on nanocrystalline diamond film. *Cryst. Eng. Comm.* (accepted). DOI:10.1039/c2ce06161a.

9. S.C. Sahoo, N. Venkataramani, S. Prasad, M. Bohra, and R. Krishnan (2012): Thickness dependent anomalous magnetic behavior in cobalt ferrite thin film. *Appl. Phys. A.* (accepted). DOI: 10.1007/s0033901167091

10. S.C. Sahoo, N. Venkataramani, S. Prasad, M. Bohra, and R. Krishnan (2012): Magnetic properties of nanocrystalline CoFe2O4/ZnFe2O4 Bilayers. *J. Supercond. Nov. Magn.* (accepted). DOI: 10.1007/s109480111237y.

11. S.C. Sahoo, N. Venkataramani, S. Prasad, M. Bohra, and R. Krishnan (2011): Substrate temperature dependent anomalous magnetic behavior in CoFe2O4 thin film. *IEEE Trans. Magn.*, **47**, 337.

12. M. Bohra, S. Prasad, N. Venketaramani, N. Kumar, S.C. Sahoo and R. Krishnan (2011): Narrow ferromagnetic resonance linewidth polycrystalline znferrite thin films. *IEEE Trans. Magn.*, **47,** 345.

3. Department of Statistics, University of Kerala, Kerala, India

Recent Publications

1. S. Minimol and P. Yageen Thomas (2011): On some properties of Makeham distribution using generalized record values and its characterization. *Brazelian Journal of Probability and Statistics* (accepted for publication).

2 P. Yageen Thomas and S. Minimol (2011): On characterization of probability distributions using record values. *Proceedings of the International Conference Mathematical Sciences in honour of Professor A.M. Mathai*, 211-220.

3. P. Yageen Thomas and G. Lesitha (2011): Estimation of scale parameter of generalized exponential distribution using ranked set sampling. *Journal of the Kerala Statistical Association* (accepted for publication).

4. P. Yageen Thomas and R.S. Priya (2011): Use of some functions of spacings in the estimation of common scale parameter of normal and double exponential distributions. *Aligarh Journal of Statistics*, 31 (accepted for publication).

5. C. Satheesh Kumar and D.S. Shibu (2012): An alternative to truncated intervened Poisson distribution. *Journal of Statistics and Applications, 7* (accepted for publication)

6. C. Satheesh Kumar and M.R. Anusree (2011): On some properties of an asymmetrical normal distribution. *Research Journal of Fatima Mata National College – Science Edition*, 4 (accepted for publication).

7. C. Satheesh Kumar and B. Unnikrishnan Nair (2011): A modified version of hyper-Poisson distribution and its applications. *Journal of Statistics and Applications, 6,* 25-36

8. C. Satheesh Kumar and M.R. Anusree (2011): On a generalized mixture of standard normal and skew normal distributions. *Statistics and Probability Letters,* **81**, 1813-1821.

9. C. Satheesh Kumar and D.S. Shibu (2011): Modified intervened Poisson distribution. *STATISTICA,* **71**, 489-499.

10. C. Satheesh Kumar (2011): Some properties of Quinkert distributions. *Statistical Methods and Applications* (to appear).

11. C. Satheesh Kumar and D.S. Shibu (2011): Some finite mixtures of intervened Poisson distributions. *Statistical Methods and Applications* (to appear).

12. C. Satheesh Kumar and B. Unnikrishnan Nair (2011): On generalized hyper-Poisson distribution. *Statistical Methods and Applications* (to appear).

13. Manoj Chacko and Shy Mary (2011): Concomitants of k-record values arising from Morgenstern family of distributions and its applications in parameter estimation. *Statistical Papers* (accepted for publication).

14. Manoj Chacko and Shy Mary (2011): Estimation of the parameter of Downton's bivariate exponential distribution using concomitants of record values. *Proceedings of the International Conference on mathematical Science in Honour of Professor A. M. Mathai*, 2011, 341-348.

15. G. Rajesh, E.I. Abdul Sathar, R. Maya and K.R.M. Nair (2012): Nonparametric estimation of the geometric vitality function. *Communications in Statistics–Theory and Methods* (accepted for publication).

Conferences attended and papers presented by the Faculty members

Dr P. Yageen Thomas gave an **invited talk** on "U-Statistics Based on Linear Functions of Order Statistics as Kernals and Applications" in the 31st Annual Conference of Indian Society for Probability and Statistics and International Conference on 'Statistics, Probability and Related Areas' held at Cochin University of Science and Technology during 19-22 December, 2011.

Dr C. Satheesh Kumar attended and gave an **invited talk** "On generalized hypergeometric recast distribution of order k" in the International Conference on "Statistics, Probability and Related Areas" and "the 31st Annual Conference of Indian Society for Probability and Statistics" held at Cochin University of Science and Technology during 19-22 December, 2011 and chaired a session of the conference.

Dr Manoj Chacko attended the 31st Annual Conference of Indian Society for Probability and Statistics and International Conference on "Statistics, Probability and Related Areas" held at Cochin University of Science and Technology during 19-22 December, 2011 and presented a paper entitled "Entropy properties of k- record values" in the conference.

Dr E. I. Abdul Sathar attended the 31st Annual Conference of Indian Society for Probability and Statistics and International Conference on "Statistics, Probability and Related Areas" held at Cochin University of Science and Technology during 19-22 December, 2011 and presented a paper entitled "Bivariate Extension of Dynamic Cumulative Residual Entropy" in the conference.

Other Activities

All the teachers from this department have rendered their services in the capacity as members of various organizing committees in the efficient organization and the successful conduct of the "81st Annual Session of the National Academy of Sciences, India (NASI) and National Symposium on Sustainable Management of Biodiversity Using Science and Technology" held at Kariavattom University Campus and hosted by University of Kerala during 24-26 November, 2011.

Dr C. Satheesh Kumar has been nominated by Government of Kerala in the capacity as a member in the "Standardization Committee of Statisticians" in connection with the Reforms to Engineering Entrance Examination 2012. He also offered (i) editorial services (as a referee) to an International Journal in Statistics: "Communications in Statistics-Theory and Methods" (Taylor & Francis journal) published from USA, (ii) service as an expert in the Selection Committee of the Best Paper Presentation Award Competition of the Physical Science Section of "the 81st Annual Session of the National Academy of Sciences, India (NASI)" held at Kariavattom University Campus during 24-26 November, 2011, (iii) services as a coordinator for the UGC sponsored Refresher Course on "Statistics and Research Methods" conducted by the Academic Staff College, University of Kerala, during 24 November 2011 to 15 December 2011 and (iv) services as a coordinator for the ERUDITE Programme of Department of Statistics, University of Kerala.

Dr E. I. Abdul Sathar offered (i) services as resource person for the UGC sponsored short term course for research guides conducted by the Academic Staff College, University of Kerala on 27/11/2010 and (ii) services as a coordinator for the Advanced Training Program on GNU/R Software jointly organized by ICFOSS & Department of Statistics, University of Kerala during 1-2 August, 2011.

Other noteworthy events

One of the papers of **Dr C. Satheesh Kumar** (jointly with **M. R. Anusree**) published in the international journal –*Statistics and Probability Letters* is ranked as 10th in the top 25 most downloaded articles in the journal during October -December 2011.

2. Department of Statistics, St Thomas College, Palai, Kerala, India

Research Papers Published

1. K.K. Jose, Ancy Joseph, Miroslav Ristic (2011): Bivariate Marshall-Olkin Weibull minification processes. *Statistical Papers,52,789-798.*

2. K.K. Jose, Bindu Abraham (2011): Analysis of DAR (1)/D/s queue with quasi-negative binomial-II as marginal distribution. *Applied Mathematics*, **2**, 1159-1169.

3. K.K. Jose, Manu Mariam Thomas (2011): Generalized Laplacian distributions and autoregressive processes. *Communications in Statistics-Theory and Methods*, **40(23)**, 4263-4277.

4. K.K. Jose and E. Krishna (2011): Marshall-Olkin assymmetric Laplace distribution and processes. *Statistica, **anno** **LXXI,n.4**,453-467.*

5. K.K. Jose and Bindu Abraham (2011): Count models with Mittag-Leffler waiting times. *Statistica, **anno LXXI,n.4**,501-514.*

6. K.K. Jose and Lishamol Tomy (2011): Geometric normal Laplace distributions and processes. *Journal of Applied Statistical Sciences*,18, 3.

7. K.K. Jose and Jane A. Luke (2011): Confidence intervals for process capability indices for the unbalanced one-way random effect ANOVA model. *Quality Reliability Engineering International*, doi:10.1002/qre.1247

8. K.K. Jose and Lishamol Tomy (2011): An AR(1) time series model with skew-Laplace III marginals. *Journal of Statistical Theory and Applications*, 9, 3, 417-426.

9. K.K. Jose and Rani Sebastian (2011): Marshall-Olkin Gumbel distributions and applications in reliability modeling and stress-strength analysis. *J. Statistical Applications,5,32-49.*

10. Dais George and Sebastian George (2011): Application of Escher transformed Laplace distribution in Web server data. *Journal of Digital Information Management,* **9(1)**, 19-26.

Ph.D awarded to Krishna E

Topic- *"Marshall-Olkin Generalization of Some Distributions and Their Applications"*,
Guide - Dr K.K. Jose.

Forthcoming event

International Conference on Epidemiology, August 16-18, 2012.

3. Postgraduate Department of Mathematics, Mary Matha Arts & Science Collge, Mananthavady, Kannur University, Kerala, India

Mathematics Research Centre MMASC, Mananthavady organized and hosted the following events

1. International Workshop on Set Valuations, Signed Graphs, Geometry and Applications, 1-6 September 2011, sponsored by the Department of Science and Technology, Government of India, New Delhi, CR Rao Advanced Institute for Mathematics Statistics and Computer Science, Hyderabad, India, and Kerala State Council for Science, Technology and Environment, Trivandrum, India.

2. Mathematics Olympiad for the students of High Schools and Higher Secondary Schools in Wayanad District of Kerala, India.

Recent Publications of the Research Team at MRC, MMAC

1. B. D. Acharya and K.A. Germina (2011): Distance compactable set-labeling of graphs. *Indian Journal of Mathematical & Computer Sciences*, **1(1),** 49-54.

2. Viji Paul and K. A. Germina (2011): On structural properties of 3-uniform linear hypergraph set-indexers of a graph. *Advances in Theoretical and Applied Mathematics,* **6**(18), 861 – 868.

3. B.D. Acharya, K.A. Germina and Jisha Elizabath Joy (2011): Topogenic graphs. *Advanced Studies in Contemporary Mathematics,* **21(2),** 139-159.

Three Scholars Completed Their Ph. D's

[Open Ph.D defence held at Mathematics Research Centre, Mary Matha Arts & Science College, Mananthavady on the following dates:]

Dr Jisha Elizabath Joy

A Study on Topologies Arising from Graphs and Digraphs

(19th December 2011)

Dr Beena Koshy

Labeling of Graphs and Hypergraphs

(13th February 2012)

Dr Remesan Thirumangalath

Graph Connections with Probability and Statistics

(4th February, 2012)

Personal News

Dr Germina chaired/organized the following events:

1. Chaired a session on graph theory and delivered an invited talk at the international conference: *STATISTICS-2011* during 1-4, July, 2011, at Concordia University, Montreal, Canada.

2. Organizing Secretary for the International Workshop on Set-valuations, Signed Graphs, Geometry and Applications held at MRC, MMASC, Mananthavady, 2-6, September 2011.

3. Chaired a session on Second India-Taiwan Conference on Discrete Mathematics, held at Amritha University, Coimbatore during 8-11 September 2011.

Conferences attended and papers presented by the research team at MRC, MMASC

1. The International Workshop on Set-valuations, Signed Graphs, Geometry and Applications at MRC, MMASC, Mananthavady, 2-6, September 2011.

Dr Michel Tharakan, Hon Vice-Chancellor of Kannur University, inaugurating the International Workshop

2. Second India-Taiwan Conference on Discrete Mathematics at Amritha University, Coimbatore, 8-11 September 2011.

3. Seventh Annual Conference of Academy of Discrete Mathematics and Its Applications and Graph Theory Day, NIT, Calicut, 9 November 2011.

Dr E. Sampath Kumar, Dr Mukti Acharya and other participants of International Workshop

4. National Seminar on Analysis and Its Applications, Catholicate College, Pathanamthitta, 7-8, December 2011

5. National Symposium of Mathematical Methods and Applications, IIT, Madras, 22 December 2011.

6. 24th Kerala Science Congress, Rubber Research Institute of India, Kottayam, 29-31 January 2012.

Dr Ashutosh Shukla during his convocation at Banaras Hindu University, India

Dr Ashutosh Shukla of CMS attended the national conference on **Recent Developments in the Applications of Reliability Theory and Survival Analysis,** 2-3 February 2012, Pondicherry University, Puducherry -605014, India, and presented the paper "*Bayesian estimation for the reliability of load-sharing systems under asymmetric loss*". He also participated at the national conference on **New Dimension in Statistics: Concepts and Issues,** 2-4 March 2012, Banaras Hindu University, Varanasi - 221005, India, NOSCI-2012 and presented the paper **"***Reliability of k-components load-sharing systems: a Bayes study under asymmetric loss*".

Dilip Kumar (SRF,CMS) inaugurating and delivering keynote address during the Mathematics Association Inauguration held at SVR NSS college, Vazhoor, Kerala, India, on 29th March 2012

Dilip Kumar (SRF,CMS) (second from left) during the valedictory session of the Mathematics Association held at SB college, Changanassery, Kerala, India, on 16th March 2012. He delivered the keynote address.