Today's Topics:
1. Ancient Chinese Mathematics
2. Preprints in arXiv.org
3. About the Activity Group
4. Submitting contributions to OP-SF NET

Calendar of Events:

March 21-24, 2009
Workshop "Approximation Theory and Signal Analysis"
dedicated to Professor Paul Leo Butzer on the occasion of his 80th birthday
Lindau (Lake Constance), Germany
15.6, #2 16.1, #1
http://ibb.helmholtz-muenchen.de/~biomath/workshop_atsa.html

March 25-30, 2009
Random Matrices and Integrability: From Theory to Application, Yad Hashmona, Israel
http://www.hit.ac.il/staff/kanzieper/yad8

April 13-25, 2009
CIMPA-unesco-Tunisia School "Analytical and Probabilistic Aspects of Dunkl Theory", Monastir, Tunisia
15.5 #6

April 19-26, 2009 - ****CANCELED****
June 8-12, 2009
Sixth International Conference on Computational Methods and Function Theory, Ankara, Turkey.
http://www.bilkent.edu.tr/~cmft/

June 14-20, 2009
47th International Symposium on Functional Equations Gargnano, Italy.
GianLuigi.Forti@mat.unimi.it

June 15-18, 2009
3rd International Conference on Mathematics & Statistics, Athens, Greece
http://www.atiner.gr/docs/Mathematics.htm

June 25-28, 2009
International Conference on Applied Analysis and Scientific Computation
Shanghai Normal University, Shanghai, China
http://mathsc.shnu.edu.cn/conference/index.htm

July 29 - July 3, 2009
Workshop "Discrete systems and special functions", Newton Institute for Mathematical Sciences, Cambridge, UK.
http://www.newton.ac.uk/programmes/DIS/ws.htm

July 6-10, 2009
2009 SIAM Annual Meeting, Denver, Colorado, USA
http://www.siam.org/meetings/an09/

July 20-24, 2009
FPSAC’09 - 21st Annual International Conference on Formal Power Series and Algebraic Combinatorics, Hagenberg, Austria
http://www.risc.jku.at/conferences/fpsac2009

July 20-25, 2009
10th Symposium on Orthogonal Polynomials, Special Functions and Applications (OPSFA-10), Leuven, Belgium

September 4-9, 2009
2nd Dolomites Workshop on Constructive Approximation and Applications (DWCAA09), Alba di Canazei (Trento), Italy
http://www.math.unipd.it/~dwcaa09

September 13-19, 2009
International Conference on Functional Equations and Inequalities, Krakow, Poland
In the January/February 2009 issue of SIAM News Philip Davis wrote a review of Simon Winchester’s “The Man Who Loved China”. This book describes the life of Joseph Needham, a distinguished biochemist from Cambridge University, England, and author of the multi-volume “Science and Civilization in China” (Cambridge University Press). Volume 3 (1959) contains 168 pages on ancient Chinese mathematics, which is why Needham is a person of particular interest to Davis and to us. The reviewer discusses not just the book under review, but has interesting things to say about the critical reception of Needham's work by later historians of science. For criticisms of Needham specific to mathematics, Davis turns to the book “A History of Chinese Mathematics” by Jean-Claude Martzloff, which, in his outsider's judgment, is currently the best general history of the subject; it places the mathematics strongly within the ancient Chinese cultural context.

Tom Koornwinder wrote the following reaction to Davis' book review as a Letter to the Editor. This reaction will appear in the next issue of SIAM News.

With interest I read Philip Davis’s book review "Why Didn't They ...?" in SIAM News (January/February 2009, page 6). Encouraged by his recommendation, I borrowed the book A History of Chinese Mathematics by J.-C. Martzloff from the library. However, I am somewhat disappointed by the coverage of Zhu Shijie (ca. 1300) in this book. See Needham, Vol. 3, pp. 138, 139 for formulas due to Zhu Shijie (written by Needham as Chu Shih-Chieh), which were reformulated by Askey (Orthogonal Polynomials and Special Functions, SIAM, 1975, pp. 59, 60) as Vandermonde's sum (the explicit summation of the terminating Gauss hypergeometric function of argument 1). Therefore, Vandermonde's sum is now called the Chu-Vandermonde sum by the special functions community.

Martzloff, however, does not mention this work by Zhu Shijie. He does treat in some detail in Chapter 18 the much later (19th century) work of Li Shanlan. The formula (18.1) there can be reformulated as a special case of Saalschutz’s formula for hypergeometric $\text{$_{3}F_{2}$}(1)$. According to secondary sources quoted by Askey, this formula (18.1), too, seems to go back to Zhu Shijie. However, the only mention of Zhu Shijie in Chapter 18 is in a quote from the preface of the book by Li Shanlan:
"Master Zhu Shijie from the Yuan dynasty is the only one who has made use of the prescriptions relating the piling up of heaps in the chapters of his Siyuan yujian entitled ... . But his intention was only to expound the algebra and for that reason he presents the piling up of heaps neither precisely nor methodically."

Martzloff speculates in this chapter about influences on Li Shanlan by Western mathematical work. But if some of Li Shanlan's formulas go back to Zhu Shijie, then Western influence on this part is less probable.

Needham, after the formulas quoted by Askey, hints at "many other formulas of similar nature" given by Chu Shih-Chieh. I would like to see a transcription of this part of Chu's writings, to learn what further treasures his work might contain.

Tom Koornwinder,
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**Topic #2  ---------  OP-SF NET 16.2  ---------  March 15, 2009**

From: OP-SF NET Editors
Subject: Preprints in arXiv.org

The following preprints related to the fields of orthogonal polynomials and special functions were posted or cross-listed to one of the subcategories of arXiv.org mostly during January and February 2009.

Counting decomposable univariate polynomials
Authors: Joachim von zur Gathen

Airy functions over local fields
Authors: Rahul N. Fernandez, V. S. Varadarajan, David Weisbart

On the q-Extensions of the Bernoulli and Euler Numbers, Related Identities and Lerch Zeta Function
Authors: Taekyun Kim, Younghee Kim, kyoungwon Hwang

Beta Jacobi processes
Authors: Nizar Demni

New approach to q-Genocchi, Euler numbers and polynomials and their interpolation functions
Authors: Taekyun Kim
http://arxiv.org/abs/0901.0435
Convergence of ray sequences of Pade approximants to $2F_1(a,1;c;z)$, $c>a>0$
Authors: K Driver, K Jordaan

http://arxiv.org/abs/0901.0746
O(N) colour-flavour transformations and characteristic polynomials of real random matrices
Authors: Yi Wei, Boris A. Khoruzhenko

http://arxiv.org/abs/0901.0837
Structural Relations of Harmonic Sums and Mellin Transforms at Weight $w=6$
Authors: Johannes Blümlein

http://arxiv.org/abs/0901.0897
Gap Probabilities in Non-Hermitian Random Matrix Theory
Authors: G. Akemann, M.J. Phillips, L. Shifrin

http://arxiv.org/abs/0901.0947
Orthogonal polynomials on the unit circle, $q$-Gamma weights, and discrete Painlevé equations
Authors: Philippe Biane

http://arxiv.org/abs/0901.0982
Complex Hadamard matrices from Sylvester inverse orthogonal matrices
Authors: Petre Dita

http://arxiv.org/abs/0901.1104
Mathieu's series: inequalities, asymptotics and positive definiteness
Authors: Viktor P. Zastavnyi

http://arxiv.org/abs/0901.1379
Pseudo-factorials, elliptic functions, and continued fractions
Authors: Roland Bacher, Philippe Flajolet

http://arxiv.org/abs/0901.1548
On Gram's law in the theory of the Riemann zeta function
Authors: Jan Mozer

http://arxiv.org/abs/0901.1697
Note on the generalization of the higher order $q$-Genocchi numbers and $q$-Euler numbers
Authors: Taekyun Kim, Young-hee Kim, Kyoung-won Hwang

http://arxiv.org/abs/0901.1725
Inequalities for the eigenvalues of non-selfadjoint Jacobi operators
Authors: Marcel Hansmann, Guy Katriel
http://arxiv.org/abs/0901.1883
Hankel determinants of Dirichlet series
Authors: H. Monien

The fermionic p-adic integrals on \( \mathbb{Z}_p \) associated with extended q-Euler numbers and polynomials
Authors: Taekyun Kim

http://arxiv.org/abs/0901.2083
Some applications of the Stieltjes constants
Authors: Donal F. Connon

http://arxiv.org/abs/0901.2424
A new type of critical behaviour in random matrix models
Authors: R. Flume, A. Klitz

http://arxiv.org/abs/0901.2473
Higher order analogues of the Tracy-Widom distribution and the Painleve II hierarchy
Authors: T. Claeys, A. Its, I. Krasovsky

http://arxiv.org/abs/0901.2655
On Non-central Stirling Numbers of the First Kind
Authors: Milan Janjic

http://arxiv.org/abs/0901.2940
Orthogonality of Jacobi and Laguerre polynomials for general parameters via the Hadamard finite part
Authors: Rodica D. Costin

http://arxiv.org/abs/0901.3328
On the Geometric Interpretation of the Complex Fourier Transforms of a Class of Exponential Functions
Authors: Jeremy Williams

http://arxiv.org/abs/0901.3377
Mean Staircase of the Riemann Zeros: a comment on the Lambert W function and an algebraic aspect
Authors: Davide a Marca, Stefano Beltraminelli, Danilo Merlini

http://arxiv.org/abs/0901.3379
Zonal polynomials and hypergeometric functions of quaternion matrix argument
Authors: Fei Li, Yifeng Xue

http://arxiv.org/abs/0901.3452
Ramanujan Summation and the Exponential Generating Function $\sum_{k=0}^{\infty} \frac{z^k}{k!} \zeta^{\prime}(-k)$
Authors: B. Candelpergher, H. Gopalkrishna Gadiyar, R. Padma
http://arxiv.org/abs/0901.3518
On the Zeros of the Complex Fourier Transforms of a Class of Exponential Functions
Authors: Jeremy Williams

http://arxiv.org/abs/0901.3970
Integrals of products of Hermite functions
Authors: Wei-Min Wang

http://arxiv.org/abs/0901.3973
Jacob's ladders and the almost exact asymptotic representation of the Hardy-Littlewood integral
Authors: Jan Moser

http://arxiv.org/abs/0901.4176
The sl_3 Selberg integral
Authors: S. Ole Warnaar

http://arxiv.org/abs/0901.4501
Some properties of deformed $q$-numbers
Authors: Thierry C. Petit Lobão, Pedro G. S. Cardoso, Suani T. R. Pinho, Ernesto P. Borges

http://arxiv.org/abs/0901.4564
The $p$-adic valuations of sequences counting alternating sign matrices
Authors: Xinyu Sun, Victor H. Moll

http://arxiv.org/abs/0901.4680
Hankel determinants of Schroeder-like numbers
Authors: Johann Cigler

http://arxiv.org/abs/0901.4698
Hankel determinants of q-exponential polynomials
Authors: Johann Cigler

http://arxiv.org/abs/0901.2244
Matrix valued Szego polynomials and quantum random walks
Authors: M. J. Cantero, F. A. Grünbaum, L. Moral, L. Velazquez

http://arxiv.org/abs/0901.2717
On the Spatial Asymptotics of Solutions of the Toda Lattice
Authors: Gerald Teschl

http://arxiv.org/abs/0901.4716
Feynman Diagrams, Differential Reduction, and Hypergeometric Functions
http://arxiv.org/abs/0902.0041
Polynomial solutions of differential-difference equations
Authors: Diego Dominici, Kathy Driver, Kerstin Jordaan

Compatibility of the Theta correspondence with the Whittaker functors
Authors: Vincent Lafforgue (University Paris 6), Sergey Lysenko (University Nancy 1)

http://arxiv.org/abs/0902.0054
On generalized Cauchy-Stieltjes transforms of some Beta distributions
Authors: Nizar Demni

http://arxiv.org/abs/0902.0116
A passage to the Poisson-Dirichlet through the Bessel square processes
Authors: Soumik Pal

http://arxiv.org/abs/0902.0193
Critical measures, quadratic differentials, and weak limits of zeros of Stieltjes polynomials
Authors: A. Martinez-Finkelshtein, E. A. Rakhmanov

Special Functions Related to Dedekind Type DC-Sums and their Applications
Authors: Yilmaz Simsek

http://arxiv.org/abs/0902.0413
On the number of real critical points of logarithmic derivatives and the Hawaii conjecture
Authors: Mikhail Tyaglov

http://arxiv.org/abs/0902.0451
Cariñena polynomials are Jacobi polynomials
Authors: C. Vignat, P.W. Lamberti

http://arxiv.org/abs/0902.0621
Basic hypergeometric functions as limits of elliptic hypergeometric functions
Authors: Fokko van de Bult, Eric Rains

http://arxiv.org/abs/0902.0789
The series limit of sum_k 1/[k log k (log log k)^2]
Authors: Richard J. Mathar

http://arxiv.org/abs/0902.0797
De Toda à KdV
Authors: Dario Bambusi, Thomas Kappeler, Thierry Paul (DMA)

http://arxiv.org/abs/0902.0804
On a nonlinear recurrent relation
Authors: Dong Li
Computing the smallest eigenvalue of large ill-conditioned Hankel matrices
Authors: Niall Emmart, Charles C. Weems, Yang Chen

A novel analytical operator method to solve linear ordinary differential equations with variable coefficients
Authors: Wrick Sengupta

Condensation of the roots of real random polynomials on the real axis
Authors: Gregory Schehr, Satya N. Majumdar

Multiple orthogonal polynomial ensembles
Authors: Arno B.J. Kuijlaars

A simple approach to some Hankel determinants
Authors: Johann Cigler

A recurrence relation for the Li/Keiper constants in terms of the Stieltjes constants
Authors: Donal F. Connon

Recurrence formulas for Macdonald polynomials of type A
Authors: Michel Lassalle, Michael J. Schlosser

Some integrals involving the Stieltjes constants
Authors: Donal F. Connon

Group Classification of a family of second-order differential equations
Authors: J.C. Ndogmo

A complete solution to an open problem relating to an inequality for ratios of gamma functions
Authors: Feng Qi, Bai-Ni Guo

Bounds for the ratio of two gamma functions--From Wendel's limit to Elezović-Giordano-Pečarić's theorem
Authors: Feng Qi
http://arxiv.org/abs/0902.2519
A short proof of monotonicity of a function involving the psi and exponential functions
Authors: Feng Qi, Bai-Ni Guo

http://arxiv.org/abs/0902.2588
Concise sharpening and generalizations of Shafer's inequality for the arc sine function
Authors: Feng Qi, Bai-Ni Guo

http://arxiv.org/abs/0902.2991
Generalized Heun and Lamé's equations: factorization
Authors: Mahouton Norbert Hounkonnou, André Ronveaux

http://arxiv.org/abs/0902.3073
Log-convexity and log-concavity of hypergeometric-like functions
Authors: D.Karp, S.M. Sitnik

http://arxiv.org/abs/0902.3190
On a polynomial zeta function
Authors: Sergio L. Cacciatori

http://arxiv.org/abs/0902.3440
Curves defined by Chebyshev polynomials
Authors: Gene Freudenburg, Jenna Freudenburg

http://arxiv.org/abs/0902.3870
Asymptotic Independence of the Extreme Eigenvalues of GUE
Authors: Folkmar Bornemann

http://arxiv.org/abs/0902.3953
Nearest lambda_q-multiple fractions
Authors: Dieter Mayer, Tobias Mühlenbruch

http://arxiv.org/abs/0902.4064
Differential equations for deformed Laguerre polynomials
Authors: Peter J. Forrester, Christopher M. Ormerod

http://arxiv.org/abs/0902.4169
Arithmetic theory of q-difference equations (G_q-functions and q-difference modules of type G, global q-Gevrey series)
Authors: Lucia Di Vizio

http://arxiv.org/abs/0902.4608
Quantum alpha-determinants and q-deformed hypergeometric polynomials
Authors: Kazufumi Kimoto

http://arxiv.org/abs/0902.4732
On the number zeta(3)
Authors: L.A.Gutnik
Coherent states of a particle in magnetic field and Stieltjes moment problem
Authors: J.P. Gazeau, M.C. Baldiotti, D.M. Gitman

Topic #3  -----------  OP-SF NET 16.2  -----------  March 15, 2009

From: OP-SF NET Editors
Subject: About the Activity Group

The SIAM Activity Group on Orthogonal Polynomials and Special Functions consists of a broad set of mathematicians, both pure and applied. The Group also includes engineers and scientists, students as well as experts. We have around 140 members scattered about in more than 20 countries. Whatever your specialty might be, we welcome your participation in this classical, and yet modern, topic. Our WWW home page is:


This is a convenient point of entry to all the services provided by the Group. Our Webmaster is Bonita Saunders (bonita.saunders@nist.gov).

The Activity Group sponsors OP-SF NET, which is transmitted periodically by SIAM. It is provided as a free public service; membership in SIAM is not required. The OP-SF Net Editors are Diego Dominici (dominicd@newpaltz.edu) and Martin Muldoon (muldoon@yorku.ca).

To receive the OP-SF NET, send your name and email address to poly-request@siam.org.

Back issues can be obtained at the WWW addresses:
http://staff.science.uva.nl/~thk/opsfnet

For several years the Activity Group sponsored a printed Newsletter, most recently edited by Rafael Yanez. Back issues are accessible at:
http://www.mathematik.uni-kassel.de/~koepf/siam.html

SIAM has several categories of membership, including low-cost categories for students and residents of developing countries. For current information on SIAM and Activity Group membership, contact:

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email: service@siam.org
WWW: http://www.siam.org
http://www.siam.org/membership/outreachmem.htm
Finally, the Activity Group operates an email discussion group, called OP-SF Talk. To subscribe, send the email message

subscribe opsftalk Your Name

to listproc@nist.gov. To contribute an item to the discussion, send email to opsftalk@nist.gov. The archive of all messages is accessible at: http://math.nist.gov/opsftalk/archive

Topic #4 --------- OP-SF NET 16.2 --------- March 15, 2009

From: OP-SF NET Editors
Subject: Submitting contributions to OP-SF NET

To contribute a news item to OP-SF NET, send email to poly@siam.org with a copy to one of the OP-SF Editors dominicd@newpaltz.edu or muldoon@yorku.ca. Contributions to OP-SF NET 16.3 should be sent by May 1, 2009.

OP-SF NET is a forum of the SIAM Activity Group on Special Functions and Orthogonal polynomials. We disseminate your contributions on anything of interest to the special functions and orthogonal polynomials community. This includes announcements of conferences, forthcoming books, new software, electronic archives, research questions, job openings.

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http://www.math.ohio-state.edu/JAT/DATA/OPSFNET/opsfnet.html
http://math.nist.gov/opsfnet/archive

WWW home page of this Activity Group:

Information on joining SIAM and this activity group: service@siam.org

The elected Officers of the Activity Group (2008-2010) are:
Francisco J. Marcellán, Chair
Peter A. Clarkson, Vice Chair
Daniel W. Lozier, Secretary
Peter A. McCoy, Program Director

The appointed officers are:
Diego Dominici, OP-SF NET co-editor
Martin Muldoon, OP-SF NET co-editor
Bonita Saunders, Webmaster