

# OP - SF NET - Volume 20, Number 6 - November 15, 2013

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The Electronic News Net of the  
SIAM Activity Group on Orthogonal Polynomials and Special Functions  
<http://math.nist.gov/opsf/>

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## Calendar of Events:

### December 6-7, 2013

Conference on the occasion of Richard Askey's 80th birthday, Madison,  
Wisconsin, USA. 20.2 #2, 20.4 #5

<http://www.math.umn.edu/~stant001/askey80>

### December 16-20, 2013

XXIVth International Workshop on Operator Theory and its Applications,  
Bangalore, India

<http://math.iisc.ernet.in/~iwota2013/>

### January 20-24, 2014

OrthoQuad2014. An International Symposium on Orthogonality,  
Quadrature and Related Topics In Memory of Pablo González Vera,  
Puerto de la Cruz, Tenerife, Canary Islands, Spain.

<http://gama.uc3m.es/pablo/>

**January 30-31, 2014**

Conference “The Geometry of Special Functions”,  
Radboud University Nijmegen, The Netherlands  
<http://www.ru.nl/math/research/geometry-special/>

**February 17-20, 2014**

Masterclass by Barry Simon on  
“Spectral Theory of Orthogonal Polynomials”, Aarhus, Denmark  
<http://qgm.au.dk/events/show/artikel/masterclass-by-barry-simon-caltech/>

**April 11-13, 2014**

American Mathematical Society, Central Section Meeting, including Special Sessions on “Applications of Special Functions in Combinatorics and Analysis” (organized by Atul Dixit and Timothy Huber) and “Complex Function Theory and Special Functions” (organized by Roger W. Barnard and others), Lubbock, Texas, USA  
[http://www.ams.org/meetings/sectional/2211\\_program.html](http://www.ams.org/meetings/sectional/2211_program.html)

**May 26-30, 2014**

Constructive Functions 2014. In honor of Ed Saff's 70th birthday.  
Vanderbilt University, Nashville, Tennessee, USA.  
<http://www.math.vanderbilt.edu/~constructive2014/>

**June 22-26, 2014**

Fifth Jaen Conference on Approximation Theory, Computer Aided Geometric Design, Numerical Methods and Applications, Úbeda, Spain.  
<http://www.ujaen.es/revista/jja>

**July 7-11, 2014**

SIAM Annual Meeting, Chicago, Illinois, USA  
<http://www.siam.org/meetings/an14/>

**July 14-18, 2014**

XXXth International Colloquium on Group Theoretical Methods in Physics,  
Ghent, Belgium  
<http://www.group30.ugent.be/>

**December 11-20, 2014**

Foundations of Computational Mathematics, Montevideo, Uruguay  
(including workshops on Approximation Theory and on Special Functions and Orthogonal Polynomials)  
[http://www.fing.edu.uy/~jana/www2/focm\\_2014.html](http://www.fing.edu.uy/~jana/www2/focm_2014.html)

Topic #1 ----- OP-SF NET 20.6 ----- November 15, 2013

From: Paco Marcellan [pacomarc@ing.uc3m.es](mailto:pacomarc@ing.uc3m.es))

Subject: Election of SIAG/ OPSF officers term January 2014-December 2016.

Our SIAM Activity Group rules require that we hold an election for officers every three years. The SIAG election is now open through November 30, 2013. The excellent slate of candidates was prepared by the nominating committee (Kathy Driver, Charles Dunkl, Arno Kuijlaars, Andrei Martinez-Finkelshtein, Nico Temme, Roderick Wong). Additionally, there are spaces available for write-in votes for all candidate positions and for your input on future SIAG activities. Candidate information can be viewed on the ballot itself.

To cast your vote, please login using your unique credentials at the link <https://eballot4.votenet.com/siam>

The Member Number and password are provided directly by SIAM to every member of our SIAG. Questions relating to this election can be directed to Nancy Snell, SIAM Membership Coordinator, at [snell@siam.org](mailto:snell@siam.org).

I would like to encourage your involvement in our SIAG/OPSF through the election process in order to the next Board will receive the biggest support for our membership.

Topic #2 ----- OP-SF NET 20.6 ----- November 15, 2013

From : Daniel W. Lozier [daniel.lozier@nist.gov](mailto:daniel.lozier@nist.gov)

Subject: Bille C. Carlson 1924-2013

Bille Carlson, author of the DLMF chapter on Elliptic Integrals (<http://dlmf.nist.gov/19>), died on August 16.

I first met Bille many years ago and became somewhat familiar with his path-breaking advances in the theory of elliptic integrals. His development of the theory brought many disparate formulas into a much more structured setting. The formulas he derived were very general, fitting the classical Legendre elliptic integrals into a more symmetric framework. By setting parameters appropriately, long lists of less general formulas of the type that are important in applications are subsumed. In principle, and perhaps to some extent in practice, his general formulas have reduced the need for massive printed compendia, such as Byrd and Friedman's *Handbook of Elliptic Integrals for Engineers and Scientists* and Gradshteyn and Ryzhik's *Tables of Integrals, Series and Products*.

More specifically, according to <http://dlmf.nist.gov/about/bio/BCCarlson>:  
"The main theme of Carlson's research has been to expose previously hidden permutation symmetries that can eliminate a set of transformations and thereby

replace many formulas by a few. In 1963 he defined the R-function, a multivariate hypergeometric function that is homogeneous in its variables, each variable being paired with a parameter. If some of the parameters are equal, then the R-function is symmetric in the corresponding variables. This symmetry led to the development of symmetric elliptic integrals, which are free from the transformations of modulus and amplitude that complicate the Legendre theory. Symmetric integrals and their degenerate cases allow greatly shortened integral tables and improved algorithms for numerical computation. Also, the homogeneity of the R-function has led to a new type of mean value for several variables, accompanied by various inequalities.”

Bille’s formulas are also well-suited to computation. He developed effective algorithms for computing numerical values of elliptic integrals. These were published in 1965 in *Journal of Mathematical Physics*, in 1972 in *Mathematics of Computation*, and in 1979 in *Numerische Mathematik*. In 1981, Bille and Elaine Notis co-authored *Algorithm 577: Algorithm for incomplete elliptic integrals*, published in *ACM Transactions on Mathematical Software*. Many commercial and open-source software packages quickly incorporated Bille’s methods, where they remain in use today.

Bille was an outstanding contributor to the DLMF project. His chapter consists of two parts, the first on the classical Legendre theory and the second on his far-reaching extensions and generalizations of it.

I append the following excerpt from the obituary published by Adams & Soderstrum Family of Funeral Homes, Ames, Iowa, reproduced here with permission:

*“Bille Chandler Carlson was born June 27, 1924, in Boston, Massachusetts, and spent his boyhood on the seashore of Cape Cod. He began studies at Harvard College, but joined the U.S. Navy after the onset of World War II and worked on the island of Guam with radar technology, which was novel at the time. After the War, he returned to Harvard and completed Bachelor’s and Master’s degrees in physics and mathematics. He then went to Oxford as a Rhodes Scholar and completed a doctoral degree in physics. After four years in the Physics Department at Princeton, Bille came to the Ames Laboratory and Iowa State University in 1954, where he was a Professor in the Physics and Mathematics Departments, ultimately as a Professor Emeritus.*

*He is known for having developed [the] Carlson elliptic integrals, some of which he described in his 1977 book, *Special Functions of Applied Mathematics*, and in the *National Institute of Standards Handbook of Mathematical Functions* (2010).”*

### Topic #3 ----- OP-SF NET 20.6 ----- November 15, 2013

From: OP-SF NET Editors

Subject: Barry Simon Masterclass in Aarhus

The Centre for Quantum Geometry of Moduli Spaces (QGM) will present a Masterclass by Barry Simon on “Spectral Theory of Orthogonal Polynomials”, Aarhus, Denmark, during the period 17-20 February, 2014.

Here is some of the information from the web site:

<http://qgm.au.dk/events/show/artikel/masterclass-by-barry-simon-caltech/>

“Spectral theory is the study of the connections between the fundamental equations of a system and its spectral properties - typically as seen in audio, optical or other scattering data. The difficulty is often that there is no explicit solution of the inverse problem - that is going from the spectral data to the parameters of the equations (“Can you hear the shape of a drum?”). The spectral theory of orthogonal polynomials on the real line (OPRL) or unit circle (OPUC) is an especially useful spectral theory laboratory precisely because the solution of the inverse problem is so explicit. These lectures will begin by describing the underlying framework, then turn to the basic results for the case of a single interval or whole circle (regularity, Rachmanov’s theorem, Szego’s theorem, Killip-Simon theorem) and then discuss the finite gap case which requires the study of certain Fuchsian groups. No prior exposure to OPs or Fuchsian groups will be required but the students will be expected to have a working knowledge of the basics of functional analysis and Hilbert space operator theory, especially of the spectral theorem.”

“Guest Speakers:

Andrei Martínez Finkelshtein (Universidad de Almería)

Jacob Stordal Christiansen (Lund University)

Jonathan Breuer (Hebrew University of Jerusalem)”

“In special cases, QGM is able to offer limited financial support to junior researchers (PhD students and postdocs). Only applications received before 10 Jan 2014 will be considered for financial support.”

### Topic #4 ----- OP-SF NET 20.6 ----- November 15, 2013

From : OP-SF NET Editors

Subject: Articles in memory of A. A. Karatsuba

In OP-SF NET 20.3, Topic #9, we announced the publication of papers dedicated to the memory of A.A. Karatsuba (1937—2008):

<http://link.springer.com/journal/11501/276/1/page/1>

<http://link.springer.com/journal/11501/280/2/suppl/page/1>

<http://link.springer.com/article/10.1134/S0081543813030012>

Ekaterina Karatsuba [karacuba@mi.ras.ru](mailto:karacuba@mi.ras.ru) informs us of the appearance of a third volume

<http://link.springer.com/journal/11501/282/1/suppl/page/1>

with an original paper by A.A. Karatsuba

"Comments to my works, written by myself"

<http://link.springer.com/article/10.1134/S0081543813070018>

The Russian originals in the two last issues have free access, and they have originally English papers in English. The addresses of these journals are the following:

I.

[http://www.mathnet.ru/php/archive.phtml?jrnid=spm&wshow=issue&year=2012&volume=16&volume\\_alt=&issue=&issue\\_alt=&option\\_lang=rus](http://www.mathnet.ru/php/archive.phtml?jrnid=spm&wshow=issue&year=2012&volume=16&volume_alt=&issue=&issue_alt=&option_lang=rus)

[http://www.mathnet.ru/php/archive.phtml?jrnid=spm&wshow=issue&bshow=contents&series=0&year=2012&volume=16&issue=&option\\_lang=rus&bookID=1451](http://www.mathnet.ru/php/archive.phtml?jrnid=spm&wshow=issue&bshow=contents&series=0&year=2012&volume=16&issue=&option_lang=rus&bookID=1451)

II.

[http://www.mathnet.ru/php/currentissue.phtml?jrnid=spm&option\\_lang=rus](http://www.mathnet.ru/php/currentissue.phtml?jrnid=spm&option_lang=rus)

[http://www.mathnet.ru/php/currentissue.phtml?jrnid=spm&wshow=issue&bshow=contents&series=0&year=2013&volume=17&issue=&option\\_lang=rus&bookID=1483](http://www.mathnet.ru/php/currentissue.phtml?jrnid=spm&wshow=issue&bshow=contents&series=0&year=2013&volume=17&issue=&option_lang=rus&bookID=1483)

**Topic #5 ----- OP-SF NET 20.6 ----- November 15, 2013**

From : OP-SF NET Editors

Subject: Gautschi Selected Works

The following volumes have been published:

Walter Gautschi, Selected Works with Commentaries, Volumes 1,2,3  
C. Brezinski and A. Sameh (Eds.)

Series: Contemporary Mathematicians

Birkhäuser, Basel, 2014

<http://www.springer.com/birkhauser/mathematics/book/978-1-4614-7033-5>

<http://www.springer.com/birkhauser/mathematics/book/978-1-4614-7048-9>

<http://www.springer.com/birkhauser/mathematics/book/978-1-4614-7131-8>

The volumes include:

Biography of Walter Gautschi - by the editors

A brief summary of my scientific work and highlights of my career -  
by Walter Gautschi

Numerical conditioning - by Nicholas J. Higham

Special Functions - by Javier Segura

Interpolation and approximation - by Miodrag M. Spalević

Orthogonal polynomials on the real line - by Gradimir V. Milovanović

Polynomials orthogonal on the semicircle - by Lothar Reichel

Chebyshev quadrature - by Jaap Korevaar

Kronrod and other quadratures - by Giovanni Monegato

Gauss-type quadrature - by Walter Van Assche

Linear recurrence relations - by Lisa Lorentzen

Ordinary differential equations - by John Butcher

Computer algorithms and software packages - by Gradimir V. Milovanović

History and biography - by Gerhard Wanner

Miscellanea - by Martin J. Gander

**Topic #6 ----- OP-SF NET 20.6 ----- November 15, 2013**

From: Tom Koornwinder [T.H.Koornwinder@uva.nl](mailto:T.H.Koornwinder@uva.nl)

Subject: Macdonald's manuscripts on arXiv

[This was circulated to [SIAM-OPSF] on September 24, 2013.]

In 1987 or 1988 I.G. Macdonald wrote two informal manuscripts with titles "Hypergeometric Functions I" and "Hypergeometric Functions II (q-analogues)". Copies of these handwritten manuscripts were circulated widely, giving rise to quite a few citations. Thanks to the efforts of Plamen Koev (<http://www.math.sjsu.edu/~koev/>) and Tierney Genoar, these manuscripts have now been typed and, with the permission of the author, posted on arXiv. See <http://arxiv.org/abs/1309.4568> and <http://arxiv.org/abs/1309.5208>.

**Topic #7 ----- OP-SF NET 20.6 ----- November 15, 2013**

From: Tom Koornwinder [T.H.Koornwinder@uva.nl](mailto:T.H.Koornwinder@uva.nl)

Subject: Laguerre-Gaussian beams

[This was circulated to [SIAM-OPSF] on November 11, 2013]

Recently there was quite a lot of publicity about the paper H. Kedia et al., Tying knots in light fields,

Phys. Review Lett. 111 (2013), 150404.

See for instance

<http://physicsworld.com/cws/article/news/2013/oct/16/physicists-tie-light-into-knots>

I was wondering if the Laguerre-Gaussian beams mentioned there had some relationship with Laguerre polynomials. Indeed, according to

[http://en.wikipedia.org/wiki/Gaussian\\_beam#Laguerre-Gaussian\\_modes](http://en.wikipedia.org/wiki/Gaussian_beam#Laguerre-Gaussian_modes)

Laguerre-Gaussian modes, involving Laguerre polynomials are cylindrically symmetric solutions obtained by some way of separation of variables of the paraxial wave equation (important in laser optics)

$$u_{xx} + u_{yy} = 2ik u_z$$

It seems that these solutions were considered first in the paper

G. Goubau & F. Schwering,

On the guided propagation of electromagnetic wave beams,

IRE Trans. 9 (1961), 248-256; MR0134166.

The paraxial wave equation may also be considered as a time-dependent Schroedinger equation with two space variables. In the book W. Miller, Jr., Symmetry and separation of variables, Addison-Wesley, 1977, Table 12 on p.126 gives all ways of R-separation of variables of this equation. The Laguerre-Gaussian modes occur there as case 8, see also (4.18) in the paper C.P. Boyer, E.G. Kalnins & W. Miller, Jr., Lie theory and separation of variables. VI. The equation  $iU_t + \Delta^2 U = 0$ , J. Math. Phys. 16 (1975), 499-511.

## Topic #8 ----- OP-SF NET 20.6 ----- November 15, 2013

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 September and October 2013.

<http://arxiv.org/abs/1309.0001>

A bilateral extension of the  $q$ -Selberg integral

Masahiko Ito, Peter J. Forrester

<http://arxiv.org/abs/1309.2806>

HYPERGEOMETRIC functions Differential REDuction: MATHEMATICA based packages for differential reduction of generalized hypergeometric functions: Horn hypergeometric functions of two variables

V. Bytev, B. Kniehl

<http://arxiv.org/abs/1309.4162>

Ramanujan's radial limits and mixed mock modular bilateral  ${}_q$ -hypergeometric series  
Eric Mortenson

<http://arxiv.org/abs/1309.4163>

Some Biorthogonal Families of Polynomials Arising in Noncommutative Quantum Mechanics  
F. Balogh, Nurisya M. Shah, S. Twareque Ali

<http://arxiv.org/abs/1309.4568>

Hypergeometric Functions I  
Ian G. Macdonald

<http://arxiv.org/abs/1309.5208>

Hypergeometric Functions II (q-analogues)  
Ian G. Macdonald

<http://arxiv.org/abs/1310.7273>

Symmetry groups of  $A_n$  hypergeometric series  
Yasushi Kajihara

<http://arxiv.org/abs/1310.7676>

Transformation formulas for bilinear sums of basic hypergeometric series  
Yasushi Kajihara

<http://arxiv.org/abs/1310.1526>

Two hypergeometric tales and a new irrationality measure of  $\zeta(2)$   
Wadim Zudilin

<http://arxiv.org/abs/1310.1984>

Multiple basic hypergeometric transformation formulas arising from the balanced duality transformation  
Yasushi Kajihara

<http://arxiv.org/abs/1310.2202>

The theory of contractions of 2D 2nd order quantum superintegrable systems and its relation to the Askey scheme for hypergeometric orthogonal polynomials

<http://arxiv.org/abs/1310.3075>

Product formulas for a two-parameter family of Heckman-Opdam hypergeometric functions of type BC  
Michael Voit

<http://arxiv.org/abs/1310.4243>

The monodromy representation and twisted period relations for Appell's hypergeometric function  $F_4$   
Yoshiaki Goto, Keiji Matsumoto

<http://arxiv.org/abs/1310.6088>

Twisted period relations for Lauricella's hypergeometric function  $F_A$   
Yoshiaki Goto

<http://arxiv.org/abs/1309.6224>

Central Limit Theorems for Biorthogonal Ensembles and Asymptotics of  
Recurrence Coefficients  
Jonathan Breuer, Maurice Duits

<http://arxiv.org/abs/1309.6259>

Differential equations for discrete Laguerre-Sobolev orthogonal polynomials  
Antonio J. Durán, Manuel D. de la Iglesia

<http://arxiv.org/abs/1309.6784>

An extended anyon Fock space and noncommutative Meixner-type orthogonal  
polynomials  
Marek Bożejko, Eugene Lytvynov, Irina Rodionova

<http://arxiv.org/abs/1309.0268>

Laurent biorthogonal polynomials,  $q$ -Narayana polynomials and domino tilings  
of the Aztec diamonds  
Shuheï Kamioka

<http://arxiv.org/abs/1309.0995>

A Favard type theorem for orthogonal polynomials on the unit circle from a  
three term recurrence formula  
Kenier Castillo, Marisa Costa, A. Sri Ranga, Daniel Veronese

<http://arxiv.org/abs/1309.1175>

Exceptional Charlier and Hermite orthogonal polynomials  
Antonio J. Duran

<http://arxiv.org/abs/1309.2346>

Equivalences of the Multi-Indexed Orthogonal Polynomials  
Satoru Odake

<http://arxiv.org/abs/1309.3296>

Using  $D$ -operators to construct orthogonal polynomials satisfying higher order  
 $q$ -difference equations  
Renato Álvarez-Nodarse, Antonio J. Durán

<http://arxiv.org/abs/1309.5632>

Orthogonal polynomials and diffusions operators  
Dominique Bakry (IMT, IUF), Stepan Orevkov (UMR CNRS 5219), Marguerite Zani  
(LAMA)

<http://arxiv.org/abs/1309.7569>

Orthogonality relations for Al-Salam--Carlitz polynomials of type II  
Wolter Groenevelt

<http://arxiv.org/abs/1309.7574>

Structure of Kernels and Cokernels of Toeplitz plus Hankel Operators

Victor D. Didenko, Bernd Silbermann

<http://arxiv.org/abs/1310.8440>

A class of symmetric  $q$ -orthogonal polynomials with four free parameters

I. Area, M. Masjed-Jamei

<http://arxiv.org/abs/1310.7240>

Another Christoffel--Darboux Formula for Multiple Orthogonal Polynomials of Mixed Type

Gerardo Araznibarreta, Manuel Manas

<http://arxiv.org/abs/1310.5134>

Matrix Valued Orthogonal Polynomials for Gelfand Pairs of Rank One

Gert Heckman, Maarten van Puijssen

<http://arxiv.org/abs/1310.0088>

The symmetrization problem for multiple orthogonal polynomials

Amílcar Branquinho, Edmundo J. Huertas

<http://arxiv.org/abs/1309.4585>

Functional definitions for  $q$ -analogues of eulerian functions and applications

Ahmad El-Guindy, Zeinab Mansour

<http://arxiv.org/abs/1310.5282>

An interesting  $q$ -series related to the 4-th symmetrized rank function

Alexander E Patkowski

<http://arxiv.org/abs/1310.6348>

New addition formula for the little  $q$ -Bessel functions

Fethi Bouzeffour

<http://arxiv.org/abs/1310.8523>

Jackson's  $(-1)$ -Bessel functions with the Askey-Wilson algebra setting

Fethi Bouzeffour

<http://arxiv.org/abs/1309.2167>

Inverses of gamma functions

Henrik L. Pedersen

<http://arxiv.org/abs/1309.3455>

On gamma quotients and infinite products

Marc Chamberland, Armin Straub

<http://arxiv.org/abs/1310.0166>

Error bounds and exponential improvements for the asymptotic expansions of the Gamma function and its reciprocal

Gergő Nemes

<http://arxiv.org/abs/1309.2209>

The resurgence properties of the large order asymptotics of the Hankel and Bessel functions

Gergő Nemes

<http://arxiv.org/abs/1309.4309>

Uniform bounds for expressions involving modified Bessel functions

Robert E. Gaunt

<http://arxiv.org/abs/1309.4354>

Critical edge behavior and the Bessel to Airy transition in the singularly perturbed Laguerre unitary ensemble

Shuai-Xia Xu, Dan Dai, Yu-Qiu Zhao

<http://arxiv.org/abs/1309.7015>

Gap probabilities for the Generalized Bessel process: a Riemann-Hilbert approach

Manuela Girotti

<http://arxiv.org/abs/1310.8493>

Functional Estimates for Derivatives of the Modified Bessel Function  $K_{\{0\}}$  and related Exponential Functions

Silvia Falletta, Stefan A. Sauter

<http://arxiv.org/abs/1310.8498>

Moments of the Gaussian  $\beta$  Ensembles and the large- $N$  expansion of the densities

N.S. Witte, P.J. Forrester

<http://arxiv.org/abs/1310.8269>

Fourier transform of a Bessel function multiplied by a Gaussian

Michael Carley

<http://arxiv.org/abs/1310.6348>

New addition formula for the little  $q$ -Bessel functions

Fethi Bouzeffour

<http://arxiv.org/abs/1309.2534>

Multiple zeta values, Padé approximation and Vasilyev's conjecture

Stephane Fischler (LM-Orsay), Tanguy Rivoal (IF)

<http://arxiv.org/abs/1309.2877>

Rigorous high-precision computation of the Hurwitz zeta function and its derivatives

Fredrik Johansson

## Topic #9 ----- OP-SF NET 20.6 ----- November 15, 2013

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 130 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:  
<http://math.nist.gov/opsf/>

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

The Activity Group sponsors OP-SF NET, an electronic newsletter, and SIAM-OPSF (OP-SF Talk), a listserv, as a free public service; membership in SIAM is not required. OP-SF NET is transmitted periodically through a post to OP-SF Talk. The OP-SF Net Editors are Diego Dominici ([dominicd@newpaltz.edu](mailto:dominicd@newpaltz.edu)) and Martin Muldoon ([muldoon@yorku.ca](mailto:muldoon@yorku.ca)).

Back issues of OP-SF NET can be obtained at the WWW addresses:  
<http://staff.science.uva.nl/~thk/opsfnet>  
<http://math.nist.gov/~DLozier/OPSFnet/>

SIAM-OPSF (OP-SF Talk), which was recently moved to a SIAM server, facilitates communication among members and friends of the Activity Group. To subscribe or to see a link the archive of all messages, go to <http://lists.siam.org/mailman/listinfo/siam-OPSF> and follow the instructions under the sub-heading "Subscribing to SIAM-OPSF". To contribute an item to the discussion, send email to [siam-opsf@siam.org](mailto:siam-opsf@siam.org). The moderators are Bonita Saunders ([bonita.saunders@nist.gov](mailto:bonita.saunders@nist.gov)) and Diego Dominici ([dominicd@newpaltz.edu](mailto:dominicd@newpaltz.edu)).

SIAM has several categories of membership, including low-cost categories for students and residents of developing countries. In addition, there is the possibility of reduced rate membership for the members of several societies with which SIAM has a reciprocity agreement; see <http://www.siam.org/membership/individual/reciprocal.php>  
For current information on SIAM and Activity Group membership, contact:  
Society for Industrial and Applied Mathematics  
3600 University City Science Center  
Philadelphia, PA 19104-2688 USA  
phone: +1-215-382-9800  
email: [service@siam.org](mailto:service@siam.org)  
WWW : <http://www.siam.org>  
<http://www.siam.org/membership/outreachmem.htm>

## Topic #10 ----- OP-SF NET 20.6 ----- November 15, 2013

From: OP-SF NET Editors

Subject: Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)

To contribute a news item to OP-SF NET, send email to one of the OP-SF Editors [dominicd@newpaltz.edu](mailto:dominicd@newpaltz.edu) or [muldoon@yorku.ca](mailto:muldoon@yorku.ca) .

Contributions to OP-SF NET 21.1 should be sent by January 1, 2014.

OP-SF NET is an electronic newsletter 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, and job openings. OP-SF NET is transmitted periodically through a post to SIAM-OPSF (OP-SF Talk).

SIAM-OPSF (OP-SF Talk) is a listserv of the SIAM Activity Group on Special Functions and Orthogonal Polynomials, which facilitates communication among members, and friends of the Activity Group. See the previous Topic. To post an item to the listserv, send email to [siam-opsf@siam.org](mailto:siam-opsf@siam.org) .

WWW home page of this Activity Group:

<http://math.nist.gov/opsf/>

Information on joining SIAM and this activity group: [service@siam.org](mailto:service@siam.org)

The elected Officers of the Activity Group (2011-2013) are:

Chair: Francisco Marcellán

Vice Chair: Jeff Geronimo

Program Director: Diego Dominici

Secretary: Peter Clarkson

The appointed officers are:

Diego Dominici, OP-SF NET co-editor and OP-SF Talk moderator

Martin Muldoon, OP-SF NET co-editor

Bonita Saunders, Webmaster and OP-SF Talk moderator