

OP-SF NET – Volume 23, Number 1 – January 15, 2016

The Electronic News Net of the
SIAM Activity Group on Orthogonal Polynomials and Special Functions

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

Please send contributions to: poly@siam.org

Subscribe by mailing to: poly-request@siam.org or listproc@nist.gov

Editors:

Howard S. Cohl

howard.cohl@nist.gov

Kerstin Jordaan

kerstin.jordaan@up.ac.za

Topics:

1. Message from the Chair (January 2016)
2. C. Koutschan, M. Kauers, and D. Zeilberger received 2016 AMS Robbins Prize
3. OPSF-S6 Summer School July 11–15, 2016, now accepting applications
4. First announcement/Call for participation: Journées Approximation 2016
5. First announcement: Dunkl operators, special functions and harmonic analysis
6. Announcement: *Riemann-Hilbert Problems* by Tom Trogdon and Sheehan Olver
7. Second announcement: SANUM 2016 with special session on OPSFA
8. Report on JMM AMS Special Session on Recent Advances in OPSF
9. Preprints in arXiv.org
10. About the Activity Group
11. Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)

Calendar of Events:

March 17–21, 2016

Number Theory in honor of Krishna Alladi's 60th birthday

University of Florida, Gainesville, Florida, USA

<http://www.qseries.org/fgarvan/alladi60.html>

March 22–24, 2016

40th South African Symposium of Numerical and Applied Mathematics (SANUM)

University of Stellenbosch, South Africa

<http://sanum.github.io>

May 20, 2016

5^{èmes} Journées Approximation 2016,

International Conference on Constructive Complex Approximation

Laboratoire Paul Painlevé, Université de Lille, France

<http://math.univ-lille1.fr/~bbecker/ja2016>

June 5–10, 2016

XII international Conference on Approximation and Optimization
Havana University, Cuba
<http://gama.uc3m.es/appopt>

June 6 – June 8, 2016

Second joint Conference of the Belgian, Royal Spanish and Luxembourg Mathematical Societies
Special Session on Orthogonal Polynomials and Special Functions
Universidad de la Rioja, Logroño, Spain
<http://bsl.unirioja.es>

June 27 – July 1, 2016

Abecederian of SIDE (ASIDE) 12 Summer School,
Centre de Recherches mathématiques, Université de Montréal, Montréal, Quebec, Canada
<http://www.crm.umontreal.ca/ASIDE16>
(We have been informed by the ASIDE16 organizers that this site will be active shortly)

July 3–9, 2016

Symmetries and Integrability of Difference Equations 12,
Hôtel Le Chanteclerc, Saint Adèle, Québec, Canada
http://www.crm.umontreal.ca/2016/SIDE12/index_e.php

July 11–15, 2016

OPSF–S6 Summer School on Orthogonal Polynomials and Special Functions,
Dedicated to the memory and legacy of Frank W. J. Olver,
[Norbert Wiener Center for Harmonic Analysis and Applications](#),
University of Maryland, College Park, Maryland, USA
<http://www.norbertwiener.umd.edu/Education/OPSFS6>

July 20–22, 2016

The 41st International Symposium on Symbolic and Algebraic Computation (ISSAC) 2016,
Wilfrid Laurier University, Waterloo, Ontario, Canada
<http://www.issac-conference.org/2016>

August 8–12, 2016

Dunkl operators, special functions and harmonic analysis,
Universität Paderborn, Paderborn, Germany
<https://math.uni-paderborn.de/arbeitsgruppen/arbeitsgruppe-harmonische-analyse/dunkl2016>

June 26–30, 2017

OPSF–S7 Summer School on Orthogonal Polynomials and Special Functions,
University of Kent, Canterbury, UK
<http://www.kent.ac.uk/smsas/personal/opsfa>

July 3–7, 2017

14th International Symposium on Orthogonal Polynomials, Special Functions and
Applications (OPSFA14), University of Kent, Canterbury, UK
<http://www.kent.ac.uk/smsas/personal/opsfa>

July 10–19, 2017

Foundations of Computational Mathematics,
Barcelona, Spain
<http://focm-society.org>

Topic #1 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Walter Van Assche (walter.vanassche@wis.kuleuven.be)

Subject: Message from the Chair (January 2016)

This is the first newsletter of the New Year 2016 and I'd like to use this opportunity to wish everyone the best for 2016, with many new and interesting research results, new insights in special functions and a very orthogonal polynomial experience. I just had a look at the membership directory and we now have 185 members in the OPSF activity group. This is the highest this century and I am quite happy with that. The [OPSFA-13](#) conference was one of the highlights in 2015 and you still have the opportunity to submit a paper to the special [OPSF special issue of SIGMA](#) (deadline is 31 January). In the mean time, preparations for two summer schools and for the next [OPSFA-14](#) meeting are very well in motion. This issue of the newsletter already has some details of the [OPSF-S6](#) summer school at the Norbert Wiener Center for Harmonic Analysis and Applications of the University of Maryland (July 11-15, 2016). Next year there will another summer school [OPSF-S7](#) preceding the OPSFA-14 conference at the University of Kent, UK. Many other conferences and workshops are announced in the Calendar of Events, so that gives many opportunities for members of the activity group to meet and interact. I always liked this aspect of research: interacting with people and interchanging ideas.

I'm looking forward to see many of you this year, and I am travelling around a lot to increase the probability of this event.

Topic #2 ——— OP – SF Net 23.1 ——— January 15, 2016

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

Subject: C. Koutschan, M. Kauers, and D. Zeilberger received 2016 AMS Robbins Prize

At the 2016 [Joint Mathematics Meetings](#) in Seattle, WA on January 7, 2016

- Christoph Koutschan (Austrian Academy of Sciences)
- Manuel Kauers (Johannes Kepler University, Linz, Austria)
- Doron Zeilberger (Rutgers University)

received the [2016 AMS David P. Robbins Prize](#).



The three are honored for their paper, "Proof of George Andrews's and David Robbins's q -TSP conjecture," *Proceedings of the National Academy of Sciences (USA)* **108**, 6, pp. 2196–2199 (2011) which is available on [Koutschan's website](#). More details are available [here](#) and in the [Prizes and Awards booklet](#).

Topic #3 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Howard Cohl (howard.cohl@nist.gov)

Subject: OPSF–S6 Summer School July 11–15, 2016, now accepting applications

If you are a graduate student, postdoc, or early career researcher, you might be interested in attending the OPSF–S6 Summer School, July 11–15, 2016, at the [Norbert Wiener Center for Harmonic Analysis and Applications](#), University of Maryland, College Park, Maryland, USA. There will be funding available for attendees, so please express your interest in attending by sending e-mail with the following information to opsf@math.umd.edu:

- your name;
- your affiliation; and
- a description of the degrees you have obtained with dates.

A summary of the OPSF–S6 Summer School lectures is as follows.

Exceptional Orthogonal Polynomials by Antonio Durán,

Departamento de Análisis Matemático, Universidad de Sevilla, Sevilla, Spain

We will consider the two more important extensions of the classical and classical discrete orthogonal polynomials. Namely: Krall or bispectral polynomials which, besides the orthogonality, are also common eigenfunctions of higher order differential or difference operators; and exceptional polynomials which have recently appeared in connection with quantum mechanic models associated to certain rational perturbations of the classical potentials. We also explore the relationship between both extensions and how they can be used to expand Askey tableau.

Theory and Applications of q -Series by Mourad Ismail,

Department of Mathematics, University of Central Florida, Orlando, Florida, USA.

We develop the theory of q -series based on q -Taylor Analysis. This will take us through the Sears and Watson transformations. We will also cover q -orthogonal polynomials and biorthogonal rational functions. As applications we will derive the Rogers–Ramanujan identities and some of their generalizations.

Spectral Theory and Special Functions by Erik Koelink,

Department of Mathematics, Radboud Universiteit Nijmegen, The Netherlands

Many special functions are eigenfunctions to explicit operators, such as difference and differential operators. The study of the spectral properties of such operators leads to explicit information for the corresponding special functions. One of the best known cases is the proof of Favard’s theorem for orthogonal polynomials, and we start with this case. This approach will then be extended to other situations.

Elliptic Hypergeometric Functions by Hjalmar Rosengren,

Chalmers University of Technology and University of Gothenburg, Göteborg, Sweden

Elliptic hypergeometric functions are a relatively recent class of special functions. Although some examples can be found in the physics literature from the 1980’s, their mathematical theory has only been developed during the last twenty years. We will give an introduction to elliptic hypergeometric series and integrals and discuss some relations to other topics such as solvable lattice models.

Orthogonal Polynomials and Combinatorics by Jiang Zeng,

Institut Camille Jordan Université Claude Bernard Lyon-I, Villeurbanne, Lyon, France

We present the interplay between orthogonal polynomials and combinatorics by studying combinatorial aspects of the polynomials themselves and their moments. The six lectures will be roughly divided as follows: 1. Basic enumerative combinatorics; 2. Classical orthogonal polynomials as enumerative polynomials.; 3. Flajolet–Viennot’s theory of general orthogonal polynomials (I); 4. Flajolet–Viennot’s theory of general orthogonal polynomials (II); 5. Moments of q -orthogonal polynomials; and 6. Linearization coefficients of q -orthogonal polynomials.

Topic #4 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Paco Marcellán (pacomarc@ing.uc3m.es)

Subject: First announcement/Call for participation: Journées Approximation 2016

5^{èmes} Journées Approximation 2016

Friday May 20, 2016, Université de Lille, France

This is the fifth international meeting organized in Lille on constructive approximation in the complex plane. Various topics will be covered, in particular orthogonal polynomials and rational approximation, low rank tensor approximation in high dimensions, numerical aspects of approximation, asymptotic analysis and Riemann–Hilbert problems, random matrices, quadrature formulas, and others.

Invited speakers:

- Annie Cuyt (University of Antwerp, Belgium)
- Sylvain Chevillard (INRIA Sophia Antipolis, France)
- Tom Claeys (Université Catholique de Louvain, Belgium)
- Albert Cohen (Université Paris VI, France)
- Stefano de Marchi (University of Padova, Italy)
- Dries Stivigny (Katholieke Universiteit Leuven, Belgium)
- Alfredo Deaño (University of Kent, England)
- Antonio Durán (Universidad de Sevilla, Spain)

There will also be a poster session. We kindly invite you to submit an abstract.

Deadlines:

Abstract submission: March 31, 2016

Online registration: March 31, 2016

Organizers:

Ana C. Matos (Université de Lille)

Abderrahman Bouhamidi (Université du Littoral)

Karl Deckers (Université de Lille)

Bernd Beckermann (Université de Lille)

We are looking forward to meeting you in Lille in May 2016.

For more information, see <http://math.univ-lille1.fr/~bbecker/ja2016>.

Topic #5 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Margit Rösler (roesler@math.upb.de)

Subject: First announcement: Dunkl operators, special functions and harmonic analysis

On the occasion of Charles F. Dunkl's 75th birthday, there will be a conference in Paderborn, Germany, August 8–12, 2016, on:

[Dunkl Operators, Special Functions and Harmonic Analysis](#)

Organizing committee:

Mourad Ismail, Tom Koornwinder, Eric Opdam, Margit Rösler, Michael Voit.

The focus of the conference will be on current developments in harmonic analysis, representation theory and special functions related to Dunkl operator techniques. Topics in particular include harmonic analysis and special functions associated with root systems, representation theory of affine Hecke algebras, as well as applications in probability and mathematical physics such as Dunkl processes, integrable systems. The conference will also feature a broader range of related topics including harmonic analysis on symmetric spaces and hypergroups, orthogonal polynomials and special functions.

Confirmed invited speakers:

- Bechir Amri (Tunis)
- Sergio Andraus (Tokyo)
- Jean-Philippe Anker (Orléans)
- Yuri Berest (Cornell)
- Fethi Bouzaffour (Riyadh)
- Misha Feigin (Glasgow)
- Peter Forrester (Melbourne)
- Leonard Gallardo (Tours)
- Vincent Genest (MIT)
- Iain Gordon (Edinburgh)
- Stephen Griffeth (Talca)
- Joachim Hilgert (Paderborn)
- Rupert Lasser (Munich)
- Hiroshi Oda (Tokyo)
- Bent Orsted (Aarhus)
- Siddhartha Sahi (Rutgers)
- Fabio Scarabotti (Rome)
- Dennis Stanton (Minnesota)
- Jasper Stokman (Amsterdam)
- Sundaram Thangavelu (Bangalore)
- Monica Vazirani (UC Davis)
- Luc Vinet (Montréal)
- Yuan Xu (Oregon)
- Ruiming Zhang (Yangling)

You are welcome to participate in this conference!

Registration is open on the Conference homepage:

<http://math.uni-paderborn.de/arbeitsgruppen/arbeitsgruppe-harmonische-analyse/dunkl2016>

Deadline for registration: May 15, 2016.

In addition to the invited talks, there will be contributed talks of 25 minutes duration. If you are interested to give a contributed talk, please indicate this on the registration form. There is a separate submission form for abstracts on the Conference homepage.

Deadline for submission of abstracts: is also May 15, 2016.

The conference [website](#) will be regularly updated. In particular, we shall soon add some recommendations for accomodation.

We are looking forward to seeing you in Paderborn!

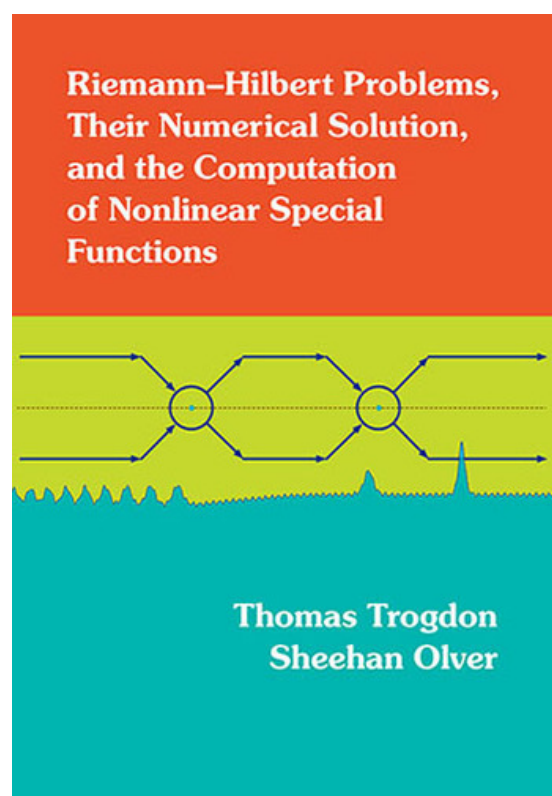
Topic #6 ——— OP – SF Net 23.1 ——— January 15, 2016

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

Subject: Announcement: *Riemann-Hilbert Problems* by Tom Trogdon and Sheehan Olver

The Society for Industrial and Applied Mathematics has announced the publication of the book *Riemann-Hilbert Problems, Their Numerical Solution, and the Computation of Nonlinear Special Functions* by Thomas Trogdon and Sheehan Olver. The following description can be found [here](#).

Riemann–Hilbert problems are fundamental objects of study within complex analysis. Many problems in differential equations and integrable systems, probability and random matrix theory, and asymptotic analysis can be solved by reformulation as a Riemann–Hilbert problem.



This book, the most comprehensive one to date on the applied and computational theory of Riemann–Hilbert problems, includes

- an introduction to computational complex analysis,
- an introduction to the applied theory of Riemann–Hilbert problems from an analytical and numerical perspective,
- a discussion of applications to integrable systems, differential equations, and special function theory, and
- six fundamental examples and five more sophisticated examples of the analytical and numerical Riemann–Hilbert method, each of mathematical or physical significance or both.

Audience. This book is intended for graduate students and researchers interested in a computational or analytical introduction to the Riemann–Hilbert method.

Thomas Trogdon is currently an NSF Postdoctoral Fellow at the Courant Institute of Mathematical Sciences at New York University. Sheehan Olver is currently a Senior Lecturer in the School of Mathematics and Statistics at The University of Sydney.

Topic #7 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Kerstin Jordaan (kerstin.jordaan@up.ac.za)

Subject: Second announcement: SANUM 2016 with special session on OPSFA

The 40th South African Symposium of Numerical and Applied Mathematics ([SANUM 2016](#)) will take place at the [University of Stellenbosch](#), Stellenbosch, South Africa, from 22nd to 24th March 2016.

SANUM has a long standing tradition as an event in the scientific life in South Africa. Following in this tradition, the scope of SANUM 2016 includes, but is not limited to, the following topics:

- Ordinary differential equations, modelling, associated numerical analysis
- Partial differential equations, modelling, associated numerical analysis
- Numerical Analysis
- Biomathematics
- Image analysis
- Optimization
- Approximation theory

Special sessions:

Orthogonal Polynomials, Special Functions, and Applications
Machine Learning and Computer Vision
Modelling ecological and evolutionary dynamics

Plenary speakers:

- Mapundi Banda (University of Pretoria, South Africa)
- Folkmar Bornemann (Technische Universität München)
- Nick Higham (University of Manchester, UK)
- Elizabeth Mansfield (University of Kent, UK)
- Beatrice Pelloni (University of Reading, UK)
- Daya Reddy (University of Cape Town, South Africa)
- Nick Trefethen (University of Oxford, UK)
- Walter Van Assche (Katholieke Universiteit Leuven, Belgium)

Deadlines:

Early bird registration: February 14, 2016
Abstract submission: Deadline March 1, 2016

Organizing Committee:

Nick Hale, Ben Herbst, André Weidemann

Further details can be found at <http://sanum.github.io>.

Email enquiries should be sent directly to sanum2016@gmail.com.

Topic #8 ——— OP – SF Net 23.1 ——— January 15, 2016

From: Xiang-Sheng Wang (xswang@semo.edu)

Subject: Report on JMM AMS Special Session on Recent Advances in OPSF

The AMS Special Session on Recent Advances in Orthogonal Polynomials and Special Functions was held January 9, 2016 during the [Joint Mathematics Meeting](#) in Seattle, Washington. There were 10 speakers from Australia, Hong Kong, and the United States of America. The speakers and their talk titles were: **George Andrews**: A refinement of the Alladi–Schur theorem; **Richard Beals**: Understanding Meijer G -functions; **Bruce Berndt**: Some integrals of S. Ramanujan and S. Chowla; **Dan Dai**: Uniform asymptotics of orthogonal polynomials arising from coherent states; **Mourad Ismail**: Classes of bivariate orthogonal polynomials;

Ian Marquette: Ladder operators for rationally-extended potentials connected with exceptional orthogonal polynomials and superintegrability; **Daniel Parry**: Asymptotic estimation of the Andrews-Zagier function and its connection to the Wright's generalized hypergeometric function; **Xiang-Sheng Wang**: Asymptotic analysis of difference equations; **Roderick Wong**: Asymptotics of Racah polynomials; and **Xiaoju Xie**: Expected number of real zeros of random orthogonal polynomials.

Topic #9 ——— OP – SF Net 23.1 ——— January 15, 2016

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 during November and December 2015.

<http://arxiv.org/abs/1511.00020>

A quadratic hypergeometric ${}_2F_1$ transformation over finite fields
Ron Evans, John Greene

<http://arxiv.org/abs/1511.00027>

Hypergeometric foundations of Fokker-Plank like equations
A. Plastino, M. C. Rocca

<http://arxiv.org/abs/1511.00166>

Extension of Chebfun to periodic functions
Grady B. Wright, Mohsin Javed, Hadrien Montanelli, Lloyd N. Trefethen

<http://arxiv.org/abs/1511.00198>

Multiple-correction and summation of the rational series
Xiaodong Cao, Cristinel Mortici

<http://arxiv.org/abs/1511.00291>

Fast Engset computation
Parsiad Azimzadeh, Tommy Carpenter

<http://arxiv.org/abs/1511.00302>

Simple error bounds for the multivariate Laplace approximation
Parsiad Azimzadeh, Tommy Carpenter Piotr Majerski

<http://arxiv.org/abs/1511.00484>

Closed analytical solutions of the d -dimensional Schrödinger equation with deformed Woods-Saxon potential plus double ring-shaped potential
M.Chabab, A. El Batoul, M. Oulne

<http://arxiv.org/abs/1511.00795>

The largest eigenvalue distribution of the Laguerre unitary ensemble
Shulin Lyu, Yan Chen

<http://arxiv.org/abs/1511.00834>

Confluence of singularities in hypergeometric systems
Martin Klimes

<http://arxiv.org/abs/1511.01608>

Flat structure on the space of isomonodromic deformations
Mitsuo Kato, Toshiyuki Mano, Jiro Sekiguchi

<http://arxiv.org/abs/1511.01777>

On a discretization of confocal quadrics
Alexander I. Bobenko, Yuri B. Suris, Jan Techter

<http://arxiv.org/abs/1511.01967>

Diagonalization of the Finite Hilbert Transform on two adjacent intervals
Alexander Katsevich, Alexander Tovbis

<http://arxiv.org/abs/1511.01992>

Connection between quantum systems involving the fourth Painlevé transcendent and k -step rational extensions of the harmonic oscillator related to Hermite EOP
Ian Marquette, Christiane Quesne

<http://arxiv.org/abs/1511.02099>

Approximate formulas for moderately small eikonal amplitudes
A.V. Kisselev

<http://arxiv.org/abs/1511.02111>

Plane lattice walks avoiding a quadrant
Mireille Bousquet-Mélou

<http://arxiv.org/abs/1511.02146>

Heat Traces and Spectral Zeta Functions for p -adic Laplacians
L. F. Chacón-Cortés, W. A. Zúñiga-Galindo

<http://arxiv.org/abs/1511.02165>

Semilinear equations associated with Dunkl Laplacian
Mohamed Ben Chrouda, Khalifa El Mabrouk, Kods Hassine

<http://arxiv.org/abs/1511.02177>

The \mathbb{Z}_2^n Dirac-Dunkl operator and a higher rank Bannai-Ito algebra
Hendrik De Bie, Vincent X. Genest, Luc Vinet

<http://arxiv.org/abs/1511.02339>

Markov chain order estimation with parametric significance tests of conditional mutual information
Maria Papapetrou, Dimitris Kugiumtzis

<http://arxiv.org/abs/1511.02422>

The Stern diatomic sequence via generalized Chebyshev polynomials
Valerio De Angelis

<http://arxiv.org/abs/1511.02523>

Partial Radon Transform and Hamburger moment completion in \mathbb{R}^2
Hayoung Choi, Farhad Jafari

<http://arxiv.org/abs/1511.02941>

To the Hilbert class field from the hypergeometric modular function
Atsuhira Nagano, Hironori Shiga

<http://arxiv.org/abs/1511.03021>

Asymptotics of the convolution of the Airy function and a function of the power-like behavior
Sergei V. Zakharov

<http://arxiv.org/abs/1511.03308>

Generalized Hermite–Hadamard–Fejer type inequalities for GA–convex functions via Fractional integral
İmdat İşcan, Sercan Turhan

<http://arxiv.org/abs/1511.03327>

On the b -functions of hypergeometric systems
Thomas Reichelt, Christian Sevenheck, Uli Walther

<http://arxiv.org/abs/1511.03377>

Linear collective collocation and Galerkin methods for parametric and stochastic elliptic PDEs
Dinh Dũng

<http://arxiv.org/abs/1511.03529>

Dynamics of Chebyshev polynomials on \mathbb{Z}_2
Shilei Fan, Lingmin Liao

<http://arxiv.org/abs/1511.03630>

A Feynman Integral and its Recurrences and Associators
Georg Puhlfuerst, Stephan Stieberger

<http://arxiv.org/abs/1511.03679>

Invariance of the generalized oscillator under linear transformation of the related system of orthogonal polynomials
V.V. Borzov, E.V. Damaskinsky

<http://arxiv.org/abs/1511.03716>

Evaluations of certain theta functions in Ramanujan theory of alternative modular bases
N.D. Bagis

<http://arxiv.org/abs/1511.03902>

Algebraic approach to slice monogenic functions
Lander Cnudde, Hendrik De Bie, Guangbin Ren

<http://arxiv.org/abs/1511.04007>

Separation of zeros and a Hermite interpolation based frame algorithm for band limited functions
Antony Selvan, R. Radha

<http://arxiv.org/abs/1511.04039>

Generalized Goncarov polynomials

Rudolph Lorentz, Salvatore Tringali, Catherine H. Yan

<http://arxiv.org/abs/1511.04125>

Symmetric matrices, Catalan paths, and correlations

Bernd Sturmfels, Emmanuel Tsukerman, Lauren Williams

<http://arxiv.org/abs/1511.04248>

Computing Jacobi's θ in quasi-linear time

Hugo Labrande

<http://arxiv.org/abs/1511.04293>

Searching for Disjoint Covering Systems with Precisely One Repeated Modulus

Shalosh B. Ekhad, Aviezri S. Fraenkel, Doron Zeilberger

<http://arxiv.org/abs/1511.04375>

On the zeta functions on the projective complex spaces

Mounir Hajli

<http://arxiv.org/abs/1511.04564>

Multivariate polynomial interpolation on Lissajous–Chebyshev nodes

Peter Dencker, Wolfgang Erb

<http://arxiv.org/abs/1511.04603>

On relations equivalent to the generalized Riemann hypothesis for the Selberg class

Kamel Mazhouda, Lejla Smajlović

<http://arxiv.org/abs/1511.04648>

Superconvergence of Immersed Finite Element Methods for Interface Problems

Waixiang Cao, Xu Zhang, Zhimin Zhang

<http://arxiv.org/abs/1511.04720>

On some series formed by values of the Riemann Zeta function

Claude Henri Picard

<http://arxiv.org/abs/1511.04771>

Christoffel transformations for matrix orthogonal polynomials in the real line and the non-Abelian 2D Toda lattice hierarchy

Carlos Álvarez–Fernández, Gerardo Ariznabarreta, Juan Carlos García–Ardila, Manuel Mañas, Francisco Marcellán

<http://arxiv.org/abs/1511.05083>

A Symmetric System of Mixed Painlevé III – V Equations and its Integrable Origin

H. Aratyn, J. F. Gomes, D. V. Ruy, A. H. Zimerman

<http://arxiv.org/abs/1511.05215>

The para–Racah polynomials

Jean–Michel Lemay, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1511.05281>

On Hermite–Hadamard Type Inequalities Via h -Convexity with Applications in Special Means

Muhammad Iqbal, Muhammad Muddassar, Muhammad Iqbal Bhatti

<http://arxiv.org/abs/1511.05323>

The Pearcey integral in the highly oscillatory region

Jose L. Lopez, Pedro Pagola

<http://arxiv.org/abs/1511.05346>

How many Zolotarev fractions are there?

Andrei Bogatyrev

<http://arxiv.org/abs/1511.05763>

Continued Classification of 3D Lattice Walks in the Positive Octant

Axel Bacher, Manuel Kauers, Rika Yatchak

<http://arxiv.org/abs/1511.06020>

A First Szegő's Limit Theorem for a class of non-Toeplitz matrices

A. Bourget, T.K. McMillen

<http://arxiv.org/abs/1511.06057>

Moments of hypergeometric weights

Diego Dominici

<http://arxiv.org/abs/1511.06074>

New Expressions for Ergodic Capacities of Optical Fibers and Wireless MIMO Channels

Amor Nafkha, Nizar Demni, Remi Bonnefoi

<http://arxiv.org/abs/1511.06082>

Bounds for the product of modified Bessel functions

Árpád Baricz, Dragana Jankov Maširević, Saminathan Ponnusamy, Sanjeev Singh

<http://arxiv.org/abs/1511.06360>

On pro-isomorphic zeta functions of D^* -groups of even Hirsch length

Mark N. Berman, Benjamin Klopsch, Uri Onn

<http://arxiv.org/abs/1511.06612>

Some new facts around the delta neutral H function of Fox

D. Karp, E. Prilepkina

<http://arxiv.org/abs/1511.06619>

On Hermite-Hadamard-Fejer Inequality type for Convex Functions via Fractional Integrals

Abdullah Akkurt, Hüseyin Yildirim

<http://arxiv.org/abs/1511.06628>

A Dunkl generalization of q -parametric Szász-Mirakjan operators

M. Mursaleen, Md. Nasiruzzaman

<http://arxiv.org/abs/1511.06638>

Potential theory associated with the Dunkl Laplacian

Kods Hassine

<http://arxiv.org/abs/1511.06721>

Orthogonality measure on the torus for vector-valued Jack polynomials

Charles F. Dunkl

<http://arxiv.org/abs/1511.06791>

Computerizing the Andrews–Fraenkel–Sellers Proofs on the Number of m -ary partitions mod m (and doing MUCH more!)
Shalosh B. Ekhad, Doron Zeilberger

<http://arxiv.org/abs/1511.06814>

Simultaneous distribution of fractional parts of Riemann zeta zeros
Kevin Ford, Xianchang Meng, Alexandru Zaharescu

<http://arxiv.org/abs/1511.06824>

Zero-density estimates for Epstein zeta functions
Steven Gonek, Yoonbok Lee

<http://arxiv.org/abs/1511.06854>

Positive or sign-changing solutions for a critical semilinear nonlocal equation
Wei Long, Jing Yang

<http://arxiv.org/abs/1511.06945>

A census of zeta functions of quartic K3 surfaces over \mathbb{F}_2
Kiran S. Kedlaya, Andrew V. Sutherland

<http://arxiv.org/abs/1511.07056>

Orthogonal polynomials on the unit ball and fourth order partial differential equations
Clotilde Martínez, Miguel A. Piñar

<http://arxiv.org/abs/1511.07156>

Logarithmically completely monotonic functions related the q -gamma and the q -digamma functions with applications
Khaled Mehrez

<http://arxiv.org/abs/1511.07418>

A family of class-2 nilpotent groups, their automorphisms and pro-isomorphic zeta functions
Mark N. Berman, Benjamin Klopsch, Uri Onn

<http://arxiv.org/abs/1511.08098>

Multidimensional Toda lattices: continuous and discrete time
Alexander I. Aptekarev, Maxim Derevyagin, Hiroshi Miki, Walter Van Assche

<http://arxiv.org/abs/1511.08116>

The Lerch zeta function IV. Hecke operators
Jeffrey C. Lagarias, Wen-Ching Winnie Li

<http://arxiv.org/abs/1511.08157>

The Lerch zeta function and the Heisenberg group
Jeffrey C. Lagarias

<http://arxiv.org/abs/1511.08345>

Complete monotonicity and bernstein properties of functions are characterized by their restriction on \mathbb{N}_0
Rafik Aguech, Wissem Jedidi

<http://arxiv.org/abs/1511.08613>

Integrable open spin chains related to infinite matrix product states
Bireswar Basu–Mallick, Federico Finkel, Artemio Gonzalez–Lopez

<http://arxiv.org/abs/1511.08656>

Equivariant motivic integration on formal schemes and the motivic zeta function
Annabelle Hartmann

<http://arxiv.org/abs/1511.08750>

Universality of the mean number of real zeros of random trigonometric polynomials under a weak Cramer condition
Jürgen Angst, Guillaume Poly

<http://arxiv.org/abs/1511.09102>

Turán type inequalities for the q -exponential functions
Khaled Mehrez

<http://arxiv.org/abs/1511.09129>

Linear spectral transformations for multivariate orthogonal polynomials and multispectral Toda hierarchies
Gerardo Ariznabarreta, Manuel Mañas

<http://arxiv.org/abs/1511.09155>

A superintegrable discrete harmonic oscillator based on bivariate Charlier polynomials
Vincent X. Genest, Hiroshi Miki, Luc Vinet, Guofu Yu

<http://arxiv.org/abs/1511.09175>

Do orthogonal polynomials dream of symmetric curves?
A. Martinez–Finkelshtein, E. A. Rakhmanov

<http://arxiv.org/abs/1511.09192>

Counting Points on Dwork Hypersurfaces and p -adic Gamma Function
Rupam Barman, Hasanur Rahman, Neelam Saikia

<http://arxiv.org/abs/1511.09217>

On the asymptotic expansions of products related to the Wallis, Weierstrass and Wilf formulas
C.–P. Chen, R.B. Paris

<http://arxiv.org/abs/1511.09266>

Height zeta functions of projective bundles
Takuya Maruyama

<http://arxiv.org/abs/1511.09410>

Hard edge limit of the product of two strongly coupled random matrices
Gernot Akemann, Eugene Strahov

<http://arxiv.org/abs/1512.00106>

An application of hypergeometric shift operators to the chi-spherical Fourier transform
Vivian M. Ho, G. Olafsson

<http://arxiv.org/abs/1512.00129>

Pretzel Knots and q -Series

Mohamed Elhamdadi, Mustafa Hajj

<http://arxiv.org/abs/1512.00234>

Real zeros of Hurwitz–Lerch zeta functions in the interval $(-1, 0)$

Takashi Nakamura

<http://arxiv.org/abs/1512.00329>

The Asymptotic Distribution of Symbols on Diagonals of Random Weighted Staircase Tableaux

Amanda Lohss

<http://arxiv.org/abs/1512.00918>

Shifted moments of L-functions and moments of theta functions

Marc Munsch

<http://arxiv.org/abs/1512.01064>

Sobolev orthogonal polynomials on the unit ball via outward normal derivatives

Antonia M. Delgado, Lidia Fernández, Doron Lubinsky, Teresa E. Pérez, Miguel A. Piñar

<http://arxiv.org/abs/1512.01121>

New identities for finite sums of products of generalized hypergeometric functions

Runhuan Feng, Alexey Kuznetsov, Fenghao Yang

<http://arxiv.org/abs/1512.01379>

Discrete harmonic analysis associated with ultraspherical expansions

Jorge J. Betancor, Alejandro J. Castro, Juan C. Fariña, Lourdes Rodríguez–Mesa

<http://arxiv.org/abs/1512.01466>

Trigonometric representations of generalized Dedekind and Hardy sums via the discrete Fourier transform

Michael Th. Rassias, László Tóth

<http://arxiv.org/abs/1512.01686>

Numerical solution for fractional variational problems using the Jacobi polynomials

Hassan Khosravian–Arab, Ricardo Almeida

<http://arxiv.org/abs/1512.01710>

Cubature formulas of multivariate polynomials arising from symmetric orbit functions

Jiří Hrivnák, Lenka Motlochová, Jiří Patera

<http://arxiv.org/abs/1512.01720>

Elliptic rook and file numbers

Michael J. Schlosser, Meesue Yoo

<http://arxiv.org/abs/1512.01928>

New conditionally exactly solvable inverse power law potentials

A. Lopez–Ortega

<http://arxiv.org/abs/1512.01936>

Solutions to the Painlevé V equation through supersymmetric quantum mechanics

David Bermudez, David J. Fernández C., Javier Negro

<http://arxiv.org/abs/1512.02365>

A weak kernel formula for Bessel functions

Jingsong Chai

<http://arxiv.org/abs/1512.02614>

Weighted finite Fourier transform operator: Uniform approximations of the eigenfunctions, eigenvalues decay and behaviour

Abderrazek Karoui, Ahmed Souabni

<http://arxiv.org/abs/1512.02883>

On the asymptotic behavior of a log gas in the bulk scaling limit in the presence of a varying external potential II

Thomas Bothner, Percy Deift, Alexander Its, Igor Krasovsky

<http://arxiv.org/abs/1512.03103>

Polynomial Heisenberg algebras and Painlevé equations

David Bermudez

<http://arxiv.org/abs/1512.03707>

The Integral Of The Logarithmic Derivative of Hardy's Z-function, Li's Criteria for the Riemann Hypothesis, and an Extension of the Berry-Keating Hamiltonian via Generalized Pointwise Derivatives

Stephen Crowley

<http://arxiv.org/abs/1512.03724>

Wigner matrices, the moments of roots of Hermite polynomials and the semicircle law

Miklós Kornyik, György Michaletzky

<http://arxiv.org/abs/1512.03730>

Hermite-Hadamard type inequalities via differentiable h_φ -preinvex functions for Fractional Integrals

Abdullah Akkurt, Hüseyin Yildirim

<http://arxiv.org/abs/1512.03733>

On a Class of Harmonic-like numbers

Juan Pla

<http://arxiv.org/abs/1512.03898>

Automorphisms of algebras and Bochner's property for vector orthogonal polynomials

Emil Horozov

<http://arxiv.org/abs/1512.03935>

The solutions of Nonlinear Evaluation equations via Hermite Approximation

Zehra Pinar, Turgut Ozis

<http://arxiv.org/abs/1512.04025>

The Heun functions as a modern powerful tool for research in different scientific domains

P P Fiziev

<http://arxiv.org/abs/1512.04063>

A More Accurate Half-Discrete Hardy-Hilbert-Type Inequality with the Best Possible Con-

stant Factor Related to the Extended Riemann–Zeta Function
Michael Th. Rassias, Bicheng Yang

<http://arxiv.org/abs/1512.04196>

A conditionally exactly solvable generalization of the potential step
A. Lopez–Ortega

<http://arxiv.org/abs/1512.04482>

The parity theorem for multiple polylogarithms
Erik Panzer

<http://arxiv.org/abs/1512.04608>

Holonomic alchemy and series for $1/\pi$
Shaun Cooper, Wadim Zudilin

<http://arxiv.org/abs/1512.04706>

A Hilbert–Type Integral Inequality in the Whole Plane Related to the Hypergeometric Function and the Beta Function
Michael Th. Rassias, Bicheng Yang

<http://arxiv.org/abs/1512.04711>

A cotangent sum related to zeros of the Estermann zeta function
Michael Th. Rassias

<http://arxiv.org/abs/1512.04718>

A Half–Discrete Hardy–Hilbert–Type Inequality with a Best Possible Constant Factor Related to the Hurwitz Zeta Function
Michael Th. Rassias, Bicheng Yan

<http://arxiv.org/abs/1512.04762>

Asymptotics of step–like solutions for the Camassa–Holm equation
Alexander Minakov

<http://arxiv.org/abs/1512.05249>

Kernels and point processes associated with Whittaker functions
Gordon Blower, Yang Chen

<http://arxiv.org/abs/1512.05293>

On Generalized Multi Poly–Euler and Multi Poly–Bernoulli Polynomials
Roberto B. Corcino, Hassan Jolany, Cristina B. Corcino, Takao Komatsu

<http://arxiv.org/abs/1512.05502>

Short–Interval Averages of Sums of Fourier Coefficients of Cusp Forms
Thomas A. Hulse, Chan leong Kuan, David Lowry–Duda, Alexander Walker

<http://arxiv.org/abs/1512.05583>

Local universality of the number of zeros of random trigonometric polynomials with continuous coefficients
Jean–Marc Azais, Federico Dalmao, José León, Ivan Nourdin, Guillaume Poly

<http://arxiv.org/abs/1512.05798>

Extension of Huygens type inequalities for Bessel and modified Bessel Functions

Khaled Mehrez

<http://arxiv.org/abs/1512.06045>

Analytic properties of generalized Mordell–Tornheim type of multiple zeta–functions and L–functions

Takashi Miyagawa

<http://arxiv.org/abs/1512.06089>

On extremal properties of Jacobian elliptic functions with complex modulus

Petr Siegl, František Štampach

<http://arxiv.org/abs/1512.06095>

Long–time asymptotics for the focusing nonlinear Schrödinger equation with nonzero boundary conditions at infinity and asymptotic stage of modulational instability

Gino Biondini, Dionyssios Mantzavinos

<http://arxiv.org/abs/1512.06419>

The Number of Zeros of $\zeta'(s)$

Fan Ge

<http://arxiv.org/abs/1512.06476>

A note on generalized hypergeometric functions, KZ solutions, and gluon amplitudes

Yasuhiro Abe

<http://arxiv.org/abs/1512.06541>

The Ponzano–Regge asymptotic of the supersymmetric $6jS$ symbols

Lionel Bréhamet

<http://arxiv.org/abs/1512.06659>

An H^m –conforming spectral element method on multi–dimensional domain and its application to transmission eigenvalues

Jiayu Han, Yidu Yang

<http://arxiv.org/abs/1512.06752>

Fractional variational problems depending on indefinite integrals and with delay

Ricardo Almeida

<http://arxiv.org/abs/1512.06902>

The C–finite Ansatz Meets the Holonomic Ansatz

Shalosh B. Ekhad, Doron Zeilberger

<http://arxiv.org/abs/1512.07003>

Bernstein type inequalities for rational functions on analytic curves and arcs

Sergei Kalmykov, Béla Nagy

<http://arxiv.org/abs/1512.07104>

Shell polynomials and dual birth–death processes

Erik A. van Doorn

<http://arxiv.org/abs/1512.07154>

Capacity of several aligned segments

Andrei B. Bogatyrev, Oleg A. Grigoriev

<http://arxiv.org/abs/1512.07181>

Orbital stability of periodic traveling-wave solutions for the regularized Schamel equation
Thiago Pinguello de Andrade, Ademir Pastor

<http://arxiv.org/abs/1512.07308>

An orthogonal-polynomial approach to first-hitting times of birth-death processes
Erik A. van Doorn

<http://arxiv.org/abs/1512.07436>

Explaining Ramanujan's "Unclosed" Comment in His Last Letter to Hardy
Daniel Parry

<http://arxiv.org/abs/1512.07608>

On the recurrence formula of the Euler zeta functions
Joonhyung Kim

<http://arxiv.org/abs/1512.08112>

Ramanujan subspace pursuit for signal periodic decomposition
Deng Shi-Wen, Han Ji-qing

<http://arxiv.org/abs/1512.08163>

On a class of transformations of sequences of complex numbers
Iliia D. Mishev

<http://arxiv.org/abs/1512.08300>

Multipeakons of a two-component modified Camassa-Holm equation and the relation with the finite Kac-van Moerbeke lattice
Xiangke Chang, Xingbiao Hu, Jacek Szmigielski

<http://arxiv.org/abs/1512.08303>

An inverse problem for the modified Camassa-Holm equation and multi-point Padé approximants
Xiangke Chang, Jacek Szmigielski

<http://arxiv.org/abs/1512.08357>

On the numerical calculation of the roots of special functions satisfying second order ordinary differential equations
James Bremer

<http://arxiv.org/abs/1512.08436>

Mellin transform of quartic products of shifted Airy functions
E.G. Abramochkin, E.V. Razueva

<http://arxiv.org/abs/1512.08548>

A class of logarithmically completely monotonic functions relating the q -gamma function and applications
Khaled Mehrez

<http://arxiv.org/abs/1512.08721>

Particle resonance in the $(1+1)$ -dimensional Dirac equation with kink-like vector potential and delta interaction

M. Eshghi, H. Mehraban, Sameer M. Ikhdair

<http://arxiv.org/abs/1512.08862>

Radial Bargmann representation for the Fock space of type B
Nobuhiro Asai, Marek Bożejko, Takahiro Hasebe

<http://arxiv.org/abs/1512.08948>

Harmonic analysis operators related to symmetrized Jacobi expansions for all admissible parameters
Bartosz Langowski

<http://arxiv.org/abs/1512.09169>

A potential theoretic minimax problem on the torus
Bálint Farkas, Béla Nagy, Szilárd Gy. Révész

<http://arxiv.org/abs/1512.09229>

A. Hurwitz and the origins of random matrix theory in mathematics
Persi Diaconis, Peter J. Forrester

<http://arxiv.org/abs/1512.09250>

Fonctions zêta et L de variétés et de motifs
Bruno Kahn

<http://arxiv.org/abs/1512.09278>

The Harer–Zagier recursion for an irregular spectral curve
Leonid O. Chekhov

<http://arxiv.org/abs/1512.09294>

Quadratic transformations for orthogonal polynomials in one and two variables
Tom H. Koornwinder

<http://arxiv.org/abs/1512.09315>

Bocher contractions of conformally superintegrable Laplace equations
E. G. Kalnins, W. Miller, Jr., E. Subag

Topic #10 ——— OP – SF Net 23.1 ——— January 15, 2016

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 155 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).

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 Howard Cohl (howard.cohl@nist.gov) and Kerstin Jordaan (kerstin.jordaan@up.ac.za).

Back issues of OP-SF NET can be obtained at the websites:

<https://staff.fnwi.uva.nl/t.h.koornwinder/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 e-mail to siam-opsf@siam.org. The moderators are Bonita Saunders (bonita.saunders@nist.gov) and Diego Dominici (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
e-mail: service@siam.org
WWW : <http://www.siam.org>

Topic #11 OP – SF Net 23.1 January 15, 2016

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 e-mail to one of the OP-SF Editors howard.cohl@nist.gov or kerstin.jordaan@up.ac.za.

Contributions to OP-SF NET 23.2 should be sent by March 1, 2016.

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 as well as news about new appointments, promotions, research visitors, awards and prizes. 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 e-mail to 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

The elected Officers of the Activity Group (2014–2016) are:

Walter Van Assche, Chair
Jeff Geronimo, Vice Chair
Diego Dominici, Program Director
Yuan Xu, Secretary

The appointed officers are:

Howard Cohl, OP–SF NET co–editor
Kerstin Jordaan, OP–SF NET co–editor
Diego Dominici, OP–SF Talk moderator
Bonita Saunders, Webmaster and OP–SF Talk moderator

Thought of the month

“The elegance of a mathematical theorem is directly proportional to the number of independent ideas one can see in the theorem and inversely proportional to the efforts it takes to see them.”

George Pólya, *Mathematical Discovery: On Understanding, Learning, and Teaching Problem Solving*