

# OP-SF NET – Volume 26, Number 3 – May 15, 2019

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

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

OP-SF Net is distributed through [OP-SF Talk](#).

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Please send contributions to the OP-SF Net editors.

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## Calendar of Events:

### May 27–29, 2019

Recent Advances in Scientific Computation

On the 25<sup>th</sup> anniversary of the Electronic Transactions on Numerical Analysis (ETNA)

Santa Margherita di Pula outside Cagliari, Sardinia, Italy

<http://bugs.unica.it/ETNA25/>

### June 16–20, 2019

Elliptic integrable systems, special functions and quantum field theory

Nordic Institute for Theoretical Physics (**NORDITA**), Stockholm, Sweden

<http://www.nordita.org/elliptic2019>

### July 15–19, 2019

[International Congress on Industrial and Applied Mathematics \(ICIAM 2019\)](#)

Minisymposium on “Multivariate Orthogonal Polynomials: Theory and Applications”,

Organized by Paco Marcellán, Maite Pérez and Yuan Xu,

Minisymposium on “Integrable systems and discrete dynamics”,

Organized by Nalini Joshi, David Gómez-Ullate Oteiza and Nobutaka Nakazono,

Campus de Blasco Ibáñez, Universitat de València, València, Spain

<https://iciam2019.org>

### July 22–26, 2019

International Symposium on Orthogonal Polynomials, Special Functions & Applications (OPSFA–15)

RISC, Johannes Kepler University, Linz, Austria

<http://www.risc.jku.at/conferences/opsfa2019/>

### September 1–7, 2019

[The 2<sup>nd</sup> International Conference on Symmetry](#)

Special Session on “Special Functions and Orthogonal Polynomials”,

Organized by Howard S. Cohl and Roberto S. Costas–Santos,

[Centro de Ciencias de Benasque Pedro Pascual](#), Benasque, Spain

<http://benasque.org/2019symmetry>

### September 14–15, 2019

AMS Fall Central Sectional Meeting

Special Session on “Special Functions and Orthogonal Polynomials”

University of Wisconsin–Madison, Madison, Wisconsin, USA

[http://www.ams.org/meetings/sectional/2267\\_program.html](http://www.ams.org/meetings/sectional/2267_program.html)

### July 6–10, 2020

SIAM Annual Meeting, held jointly with CAIMS

(Canadian Applied and Industrial Mathematics Society)

Sheraton Centre Toronto Hotel, Toronto, Ontario, Canada

<https://www.siam.org/Conferences/CM/Main/an20>

### July 13–17, 2020

33<sup>rd</sup> International Colloquium on Group Theoretical Methods in Physics (Group33)

Cotonou, Benin

<http://www.cipma.net/group33-cotonou-benin>

Topic #1 ——— OP – SF Net 26.3 ——— May 15, 2019

From: Christoph Koutschan ([christoph.koutschan@ricam.oeaw.ac.at](mailto:christoph.koutschan@ricam.oeaw.ac.at))

Subject: OPSFA–15 2019: 2<sup>nd</sup> call for participation

OPSFA–15 2019: 2<sup>nd</sup> Call for Participation.

Registration is open.

The 15<sup>th</sup> International Symposium on Orthogonal Polynomials, Special Functions and Applications, RISC, Johannes Kepler University, Hagenberg (Linz), Austria, July 22 – 26, 2019

<https://www3.risc.jku.at/conferences/opsfa2019/>

#### Important deadlines:

- 15.05.2019: title and abstract submission for talks
- 15.05.2019: submission of posters
- 30.06.2019: early bird registration

The 15<sup>th</sup> [Symposium on Orthogonal Polynomials and Special Functions and Applications](#) (OPSFA–15) will take place from July 22 to July 26, 2019, in Hagenberg, Austria. It is organized by the [Research Institute for Symbolic Computation](#) (RISC). The conference

venue is on the campus of the University of Applied Sciences in Hagenberg. Hagenberg im Muehlkreis is a small town in Upper Austria, surrounded by green hills and located halfway between Salzburg and Vienna. All interested colleagues are cordially invited to attend this meeting.

The conference features plenary lectures given by:

- Thomas Bothner (King's College London, UK)
- Peter Clarkson (University of Kent, UK)
- Christian Krattenthaler (University of Vienna, Austria)
- Irina Nenciu (University of Illinois at Chicago, USA)
- Veronika Pillwein (Johannes Kepler University, Linz, Austria)
- Mikhail Sodin (Tel Aviv University, Israel)
- Alan Sokal (New York University, USA)
- Armin Straub (University of South Alabama, USA)
- Luc Vinet (University of Montreal, Canada)

The contributed talks will be organized in topical sessions (mini-symposia). If you are interested in giving a talk, please refer to the list of mini-symposia on the website and check to see which topic fits best; then get into contact with the respective mini-symposium organizers. If none of the topics are suitable, the talk can be presented in the general session for contributed talks. In addition, posters are accepted for display at the meeting. In both cases, please contact the conference chair.

The early registration fee (until June 30) is 300 EUR. A reduced registration fee of 190 EUR is available for students and for participants from developing countries. The registration fee covers all lunches, coffee breaks, and a welcome reception on Sunday evening (July 21). It also includes an excursion on Wednesday afternoon to the lovely medieval city of Freistadt, and the conference dinner. Moreover, a complimentary shuttle service is provided from the Linz airport / Linz train station to the conference hotel on Sunday (July 21), and in the opposite direction on Friday afternoon (July 26) and Saturday morning (July 27). Accommodation can be booked via the conference registration form at a rate of 44 EUR per night in a single room, including breakfast, but payment is done directly at the hotel upon checkout. The hotel is in walking distance to the lecture rooms.

The (post-) proceedings of this OPSFA conference will appear as a special issue in [Integral Transforms and Special Functions](#). The guest editors are Walter van Assche, Galina Filipuk, Christoph Koutschan, and Francisco Marcellán. Further details will be announced during the conference.

Conferences in the OPSFA series provide a forum for mathematicians, physicists, and computational scientists to communicate recent research results in the areas of orthogonal polynomials and special functions.

Scientific Committee:

- Walter van Assche (University of Leuven, Belgium)
- Diego Dominici (State University of New York, New Paltz, USA)
- Kathy Driver (University of Cape Town, South Africa)
- Galina Filipuk (University of Warsaw, Poland)
- Frank Garvan (University of Florida, Gainesville, USA)
- Mourad Ismail (University of Central Florida, Orlando, USA)
- Doron Lubinsky (Georgia Institute of Technology, Atlanta, USA)
- Zeinab Mansour (Cairo University, Egypt)

- Francisco Marcellán (University Carlos III, Madrid, Spain)
- Bruno Salvy (Ecole Normale Supérieure, Lyon, France)
- Michael Schlosser (University of Vienna, Austria)
- Thomas Trogdon (University of California, Irvine, USA)

Organizing Committee:

- Christoph Koutschan (RICAM, Austrian Academy of Sciences, Austria)
- Peter Paule (RISC, Johannes Kepler University Linz, Austria)

The symposium is an event of the SIAM Activity Group on Orthogonal Polynomials and Special Functions. The activity group promotes basic research in orthogonal polynomials and special functions, as well as applications of this subject in other parts of mathematics, and in science and industry. It encourages and supports the exchange of information, ideas, and techniques between workers in this field and other mathematicians and scientists. The activity group also awards the Gábor Szegő Prize every two years to an early-career researcher for outstanding research contributions in the area of orthogonal polynomials and special functions.

Topic #2      ——— OP – SF Net 26.3      ——— May 15, 2019

From: Walter van Assche ([walter.vanassche@kuleuven.be](mailto:walter.vanassche@kuleuven.be))  
Subject: Announcement: Election of new SIAG/OPSF officers

The term of the present officers of the SIAM activity group “Orthogonal Polynomials and Special Functions” (SIAG/OPSF) will end December 31, 2019.

New officers have to be elected and in order to nominate candidates for the available offices, a nominating committee has been formed, which was approved by the SIAM Vice President at Large. The nominating committee consists of Kathy Driver, Tom Koornwinder, Francisco Marcellán, Sarah Post and Yuan Xu.

The elected officer positions for which nominations are needed are:

- Chair
- Vice Chair
- Program Director
- Secretary

Descriptions and responsibilities for each position can be found at the following [link](#).

Please send all suggestions and nominations for one of the new officers to the nominating committee. The timing for the elections is as follows:

1. Nominees should be identified by June 30 and approved by August 1;
2. Ballots will be posted online and the elections will start on September 1;
3. The election is completed on November 30;
4. The new officers will start on January 1.

These dates may still change somewhat and should only be considered as a guiding line.

It was (and still is) my pleasure to serve as your chair for the past six years. I will not be running for office again but hope to see many of you at the upcoming OPSFA-15 conference in Hagenberg, Austria (July 22–26).

From: Amparo Gil ([amparo.gil@unican.es](mailto:amparo.gil@unican.es))

Subject: Report on: V Orthonet Workshop by **Amparo Gil**

The V Congress of the Spanish Network on Orthogonal Polynomials and Special Functions (**Orthonet**) took place in Pamplona (Spain). The legend states that San Fermín was the first bishop of Pamplona and baptized 40,000 pagans in three days. The organizers (Blanca Bujanda, Chelo Ferreira, José Luis Lopez, Pedro Pagola, Pablo Palacios and Ester Pérez-Sinusía) took a more efficient approach and concentrated the workshop in just two days (28–29 March.)

On the first day, the program included plenary talks by Nico Temme (Numerical evaluation of Airy-type integrals arising in uniform asymptotic analysis), María José Cantero (Sobolev inner product as a solution of inverse Darboux transformation) and myself (Computational Methods for Cumulative Distribution Functions). A junior talk by Alberto Arenas marked the end of the scientific program for the day. The evening was devoted to social activities: a guided tour to the beautiful old town and a dinner in a typical restaurant.

The second day had a plenary talk by Antonio Durán (Orthogonality and bispectrality) and three junior conferences by Misael Enrique Marriaga, Irene Valero and Juan Carlos García. There were also an open problems session (chaired by Renato Álvarez-Nodarse), a poster session and a meeting (organized by Oscar Ciaurri) of the PI's of the research groups forming the network. The social activities of the day included a walk along the bank of the Arga River and a “musicata” (a combination of music and wine tasting) which was very successful.

The organizers did a superb job running this conference and we all had excellent opportunities for discussion. Many thanks for their hospitality.



Figure 1: Orthonet V group picture.

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 March and April 2019. This list has been separated into two categories.

### **OP–SF Net Subscriber E–Prints**

<http://arxiv.org/abs/1903.00054>

On a property of random walk polynomials involving Christoffel functions  
Erik A. van Doorn, Ryszard Szwarc

<http://arxiv.org/abs/1903.00144>

Signal processing, orthogonal polynomials, and Heun equations  
Geoffroy Bergeron, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1903.00145>

Spin Chains, Graphs and State Revival  
Hiroshi Miki, Satoshi Tsujimoto, Luc Vinet

<http://arxiv.org/abs/1903.00867>

Solutions of convex Bethe Ansatz equations and the zeros of (basic) hypergeometric orthogonal polynomials  
J. F. van Diejen, E. Emsiz

<http://arxiv.org/abs/1903.00960>

Supercritical Regime for the Kissing Polynomials  
Andrew F. Celsus, Guilherme L. F. Silva

<http://arxiv.org/abs/1903.01827>

Bispectral dual difference equations for the quantum Toda chain with boundary perturbations  
J. F. van Diejen, E. Emsiz

<http://arxiv.org/abs/1903.02421>

Higher Order Quantum Superintegrability: a new “Painlevé conjecture”  
Ian Marquette, Pavel Winternitz

<http://arxiv.org/abs/1903.03708>

A Detailed Analysis of Quicksort Running Time  
Shalosh B. Ekhad, Doron Zeilberger

<http://arxiv.org/abs/1903.03766>

Some congruences related to a congruence of Van Hamme  
Victor J. W. Guo, Ji–Cai Liu

<http://arxiv.org/abs/1903.03897>

Sharp Bounds for the Arc Lemniscate Sine Function  
Horst Alzer, Man Kam Kwong



<http://arxiv.org/abs/1903.04136>

Some identities of special numbers and polynomials arising from  $p$ -adic integrals on  $\mathbb{Z}_p$   
Dae San Kim, Han Young Kim, Sung-Soo Pyo, Taekyun Kim

<http://arxiv.org/abs/1903.05622>

De Branges canonical systems with finite logarithmic integral  
Roman Bessonov, Sergey Denisov

<http://arxiv.org/abs/1903.05674>

Truncation of the reflection algebra and the Hahn algebra  
Nicolas Crampe, Eric Ragoucy, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1903.06642>

Real Zeros of Random Sums with I.I.D. Coefficients  
Aaron M. Yeager

<http://arxiv.org/abs/1903.06826>

A Universality Law For Sign Correlations of Eigenfunctions of Differential Operators  
Felipe Gonçalves, Diogo Oliveira e Silva, Stefan Steinerberger

<http://arxiv.org/abs/1903.07215>

Analytic Continuation for Multiple Zeta Values using Symbolic Representations  
Lin Jiu, Tanay Wakhare, Christophe Vignat

<http://arxiv.org/abs/1903.07494>

Quantum walks: Schur functions meet symmetry protected topological phases  
C. Cedzich, T. Geib, F. A. Grünbaum, L. Velázquez, A. H. Werner, R. F. Werner

<http://arxiv.org/abs/1903.07574>

A family of entire functions connecting the Bessel function  $J_1$  and the Lambert  $W$  function  
Christian Berg, Eugenio Massa, Ana P. Peron

<http://arxiv.org/abs/1903.08304>

Riemann–Hilbert Problems  
Percy Deift

<http://arxiv.org/abs/1903.08487>

On integrals involving quotients of hyperbolic functions  
S. A. Dar, R. B. Paris

<http://arxiv.org/abs/1903.08677>

Towers of solutions of qKZ equations and their applications to loop models  
Kayed Al Qasimi, Bernard Nienhuis, Jasper Stokman

<http://arxiv.org/abs/1903.08823>

Finite size corrections at the hard edge for the Laguerre  $\beta$  ensemble  
Peter J. Forrester, Allan K. Trinh

<http://arxiv.org/abs/1903.08914>

Implementing zonal harmonics with the Fueter principle  
Amedeo Altavilla, Hendrik De Bie, Michael Wutzig

<http://arxiv.org/abs/1903.09079>

Roots of trigonometric polynomials and the Erdős–Turán theorem  
Stefan Steinerberger

<http://arxiv.org/abs/1903.09511>

Some Remarks on a recent article by J.–P. Allouche  
Shalosh B. Ekhad, Doron Zeilberger

<http://arxiv.org/abs/1903.09738>

The elliptic Painlevé Lax equation vs. van Diejen’s 8–coupling elliptic Hamiltonian  
Masatoshi Noumi, Simon Ruijsenaars, Yasuhiko Yamada

<http://arxiv.org/abs/1903.10640>

Nonlinear eigenvalue problems for generalized Painlevé equations  
Carl M. Bender, Javad Komijani, Qing–hai Wang

<http://arxiv.org/abs/1903.11759>

Identities for Bernoulli polynomials related to multiple Tornheim zeta functions  
Karl Dilcher, Armin Straub, Christophe Vignat

<http://arxiv.org/abs/1904.00126>

Asymptotic of Cauchy biorthogonal polynomials  
U. Fidalgo, G. Lopez Lagomasino, S. Medina Peralta

<http://arxiv.org/abs/1904.00490>

Some new  $q$ –congruences for truncated basic hypergeometric series: even powers  
Victor J. W. Guo, Michael J. Schlosser

<http://arxiv.org/abs/1904.00926>

Index transforms with the product of the associated Legendre functions  
Semyon Yakubovich

<http://arxiv.org/abs/1904.01252>

Multiple Askey–Wilson polynomials and related basic hypergeometric multiple orthogonal polynomials  
Jean Paul Nuwacu, Walter Van Assche

<http://arxiv.org/abs/1904.01925>

Exact Lower Bounds for Monochromatic Schur Triples and Generalizations  
Christoph Koutschan, Elaine Wong

<http://arxiv.org/abs/1904.03573>

SanD primes and numbers  
Freeman J. Dyson, Norman E. Frankel, Anthony J. Guttmann

<http://arxiv.org/abs/1904.03770>

Rationally weighted Hurwitz numbers, Meijer  $G$ –functions and matrix integrals  
M. Bertola, J. Harnad

<http://arxiv.org/abs/1904.03789>

Classical Sturmian sequences  
Alexei Zhedanov



<http://arxiv.org/abs/1904.05058>

Generating functions of planar polygons from homological mirror symmetry of elliptic curves

Kathrin Bringmann, Jonas Kaszian, Jie Zhou

<http://arxiv.org/abs/1904.05377>

A Framework for Modular Properties of False Theta Functions

Kathrin Bringmann, Caner Nazaroglu

<http://arxiv.org/abs/1904.06804>

Nonsymmetric Macdonald polynomials via integrable vertex models

Alexei Borodin, Michael Wheeler

<http://arxiv.org/abs/1904.06953>

Regional gradient controllability of ultra-slow diffusions involving the Hadamard–Caputo time fractional derivative

Ruiyang Cai, Fudong Ge, YangQuan Chen, Chunhai Kou

<http://arxiv.org/abs/1904.07518>

Orthogonal and multiple orthogonal polynomials, random matrices, and Painlevé equations

Walter Van Assche

<http://arxiv.org/abs/1904.08173>

$d$ -orthogonal polynomials, Toda Lattice and Virasoro symmetries

Emil Horozov

<http://arxiv.org/abs/1904.08592>

Some identities of degenerate Euler polynomials associated with degenerate Bernstein polynomials

Won Joo Kim, Dae San Kim, Han Young Kim, Taekyun Kim

<http://arxiv.org/abs/1904.08838>

Perfect State Transfer on Weighted Graphs of the Johnson Scheme

Luc Vinet, Hanmeng Zhan

<http://arxiv.org/abs/1904.10643>

Heun algebras of Lie type

Nicolas Crampé, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1904.10651>

A note on Fox's  $H$  function in the light of Braaksma's results

Dmitrii Karp

<http://arxiv.org/abs/1904.11593>

Resurgent Extrapolation: Rebuilding a Function from Asymptotic Data. Painlevé I

Ovidiu Costin, Gerald V. Dunne

<http://arxiv.org/abs/1904.11844>

Higher order superintegrability, Painlevé transcendents and representations of polynomial algebras

Ian Marquette

<http://arxiv.org/abs/1904.11958>

Discrete semiclassical orthogonal polynomials of class 2  
Diego Dominici, Francisco Marcellán Español

<http://arxiv.org/abs/1904.12046>

The rarefied elliptic Bailey lemma and the Yang–Baxter equation  
V. P. Spiridonov

<http://arxiv.org/abs/1904.12438>

Effective approximation of heat flow evolution of the Riemann  $\xi$  function, and a new upper bound for the de Bruijn–Newman constant  
D. H. J. Polymath

<http://arxiv.org/abs/1904.13176>

The evaluation of a weighted sum of Gauss hypergeometric functions and its connection with Galton–Watson processes  
R. B. Paris, Vladimir V. Vinogradov

## Other Relevant OP–SF E–Prints

<http://arxiv.org/abs/1903.00176>

The Laguerre Unitary Process  
J. R. Ipsen

<http://arxiv.org/abs/1903.00250>

Series representation of a cotangent sum related to the Estermann zeta function  
Mouloud Goubi

<http://arxiv.org/abs/1903.00274>

Boundary matrices for the higher spin six vertex model  
Vladimir V. Mangazeev, Xilin Lu

<http://arxiv.org/abs/1903.00539>

Bohr–Fourier series on solenoids via its transversal variation  
Manuel Cruz–López, Francisco J. López–Hernández

<http://arxiv.org/abs/1903.00735>

Deep ReLU networks overcome the curse of dimensionality for bandlimited functions  
Hadrien Montanelli, Haizhao Yang, Qiang Du

<http://arxiv.org/abs/1903.00835>

Uniform asymptotic formulas for the Fourier coefficients of certain inverse theta functions  
Zhi–Guo Liu, Nian Hong Zhou

<http://arxiv.org/abs/1903.01099>

A graphical categorification of the two–variable Chebyshev polynomials of the second kind  
Wataru Yuasa

<http://arxiv.org/abs/1903.01163>

Szegő Limit Theorem on the Heisenberg Group  
Shyam Swarup Mondal, Jitendriya Swain

<http://arxiv.org/abs/1903.02031>

Test Vectors for Nonarchimedean Godement–Jacquet Zeta Integrals  
Peter Humphries

<http://arxiv.org/abs/1903.02105>

On self-similar solutions of the vortex filament equation  
O. Gamayun, O. Lisovyy

<http://arxiv.org/abs/1903.02341>

A fractalization of rational trigonometric function  
S. Verma, P. Viswanathan

<http://arxiv.org/abs/1903.02415>

Heun’s differential equation and its  $q$ -deformation  
Kouichi Takemura

<http://arxiv.org/abs/1903.02480>

On the universal  $p$ -adic sigma and Weierstrass zeta functions  
Clifford Blakestad, David Grant

<http://arxiv.org/abs/1903.02620>

Generalized Fourier series by double trigonometric system  
K. S. Kazarian

<http://arxiv.org/abs/1903.03068>

A four dimensional Bernstein Theorem  
Alessandro Perotti

<http://arxiv.org/abs/1903.03281>

On Eisenstein polynomials and zeta polynomials II  
Tsuyoshi Mieozaki, Manabu Oura

<http://arxiv.org/abs/1903.03747>

On a variant of multiple zeta values of level two  
Masanobu Kaneko, Hirofumi Tsumura

<http://arxiv.org/abs/1903.04074>

Dilogarithm identities for solutions to Pell’s equation in terms of continued fraction convergents  
Martin Bridgeman

<http://arxiv.org/abs/1903.04140>

$\mathbb{Q}$ -linear relations of specific families of multiple zeta values and the linear part of Kawashima’s relation  
Minoru Hirose, Hideki Murahara, Tomokazu Onozuka

<http://arxiv.org/abs/1903.04335>

Computation of Chebyshev Polynomials for Union of Intervals  
Simon Foucart, Jean-Bernard Lasserre

<http://arxiv.org/abs/1903.04857>

Asymptotics for the Sasa–Satsuma equation in terms of a modified Painlevé II transcendent  
Lin Huang, Jonatan Lenells

<http://arxiv.org/abs/1903.05033>

On the scaling behaviour of the alternating spin chain

Vladimir V. Bazhanov, Gleb A. Kotousov, Sergii M. Koval, Sergei L. Lukyanov

<http://arxiv.org/abs/1903.05151>

Geometric properties of a certain class of functions related to the Fox–Wright functions

Khaled Mehrez

<http://arxiv.org/abs/1903.05318>

$C_\lambda$ - Extended oscillator algebra and  $d$ -orthogonal polynomials

Fethi Bouzeffour, Wissem Jedidi

<http://arxiv.org/abs/1903.05547>

Sparse polynomial approximation for optimal control problems constrained by elliptic PDEs with lognormal random coefficients

Peng Chen, Omar Ghattas

<http://arxiv.org/abs/1903.05905>

Generalized Macdonald Functions on Fock Tensor Spaces and Duality Formula for Changing Preferred Direction

Masayuki Fukuda, Yusuke Ohkubo, Jun'ichi Shiraishi

<http://arxiv.org/abs/1903.06159>

$q$ -Racah ensemble and  $q$ - $P(E_7^{(1)}/A_1^{(1)})$  discrete Painlevé equation

Anton Dzhamay, Alisa Knizel

<http://arxiv.org/abs/1903.07026>

Effective rate analysis over Fluctuating Beckmann fading channels

Hussien Al-Hmood, H.S. Al-Raweshidy

<http://arxiv.org/abs/1903.07147>

The Elliptic Functions in a First-Order System

P.L. Robinson

<http://arxiv.org/abs/1903.07175>

Construction of 2-solitons with logarithmic distance for the one-dimensional cubic Schrodinger system

Yvan Martel, Tien Vinh Nguyen

<http://arxiv.org/abs/1903.07302>

Special Functions and Gauss–Thakur Sums in Higher Rank and Dimension

Quentin Gazda, Andreas Maurischat

<http://arxiv.org/abs/1903.07346>

On multisets, interpolated multiple zeta values and limit laws

Markus Kuba

<http://arxiv.org/abs/1903.07407>

Applications of generalized trigonometric functions with two parameters

Hiroyuki Kobayashi, Shingo Takeuchi

<http://arxiv.org/abs/1903.07587>

Partition Inequalities and Applications to Sum–Product Conjectures of Kanade–Russell  
Walter Bridges

<http://arxiv.org/abs/1903.07697>

Polynomials and High–Dimensional Spheres  
Amy Peterson, Ambar N. Sengupta

<http://arxiv.org/abs/1903.08162>

Generalized–hypergeometric solutions of the biconfluent Heun equation  
D. Yu. Melikdzhanian, A. M. Ishkhanyan

<http://arxiv.org/abs/1903.08335>

Cluster algebras and discrete integrability  
Andrew N.W. Hone, Philipp Lampe, Theodoros E. Kouloukas

<http://arxiv.org/abs/1903.08497>

Potential–based analyses of first–order methods for constrained and composite optimization  
Courtney Paquette, Stephen Vavasis

<http://arxiv.org/abs/1903.08540>

On the asymptotics of the rescaled Appell polynomials  
J. Fernando Barbero G, Jesús Salas, Eduardo J.S. Villaseñor

<http://arxiv.org/abs/1903.08686>

Quantum variance on quaternion algebras, III  
Paul D. Nelson

<http://arxiv.org/abs/1903.08823>

Finite size corrections at the hard edge for the Laguerre  $\beta$  ensemble  
Peter J. Forrester, Allan K. Trinh

<http://arxiv.org/abs/1903.09016>

On the determinantal structure of conditional overlaps for the complex Ginibre ensemble  
Gernot Akemann, Roger Tribe, Athanasios Tsareas, Oleg Zaboronski

<http://arxiv.org/abs/1903.09042>

Existence and uniqueness of positive periodic solutions for nonlinear fractional mixed problems  
Alberto Cabada, Wanassi Om Kalthoum

<http://arxiv.org/abs/1903.09318>

A note on the statistics of Riemann zeros  
Lucian M. Ionescu

<http://arxiv.org/abs/1903.09380>

Some connections between the Classical Calogero–Moser model and the Log Gas  
Sanaa Agarwal, Manas Kulkarni, Abhishek Dhar

<http://arxiv.org/abs/1903.09425>

$L^\infty$ -estimation of generalized Thue–Morse trigonometric polynomials and ergodic maximization

Aihua Fan, Joerg Schmeling, Weixiao Shen

<http://arxiv.org/abs/1903.09508>

The Bloch groups and special values of Dedekind zeta functions

Chaochao Sun, Long Zhang

<http://arxiv.org/abs/1903.09620>

Differential equation and recurrence relations of the Sheffer–Appell polynomial sequence: A matrix approach

H.M. Srivastava, Saima Jabee, Mohammad Shadab

<http://arxiv.org/abs/1903.10435>

Riordan arrays, Chebyshev polynomials, Fibonacci bases

E. Burlachenko

<http://arxiv.org/abs/1903.10573>

Separability and Symmetry Operators for Painlevé Metrics and their Conformal Deformations

Thierry Daudé, Niky Kamran, Francois Nicoleau

<http://arxiv.org/abs/1903.10810>

Simultaneous Approximation of Measurement Values and Derivative Data using Discrete Orthogonal Polynomials

Roland Ritt, Matthew Harker, Paul O’Leary

<http://arxiv.org/abs/1903.10853>

A geometrical summation method for the Riemann zêta function

Ulysse Reglade

<http://arxiv.org/abs/1903.11141>

A special constant and series with zeta values and harmonic numbers

Khristo N. Boyadzhiev

<http://arxiv.org/abs/1903.11690>

Optimization of Inf–Convolution Regularized Nonconvex Composite Problems

Emanuel Laude, Tao Wu, Daniel Cremers

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Some results on the optimal matching problem for the Jacobi model

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Some exact solutions of the Volterra lattice

V. E. Adler, A. B. Shabat

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Time–fractional equations with reaction terms: fundamental solutions and asymptotics

Serena Dipierro, Benedetta Pellacci, Enrico Valdinoci, Gianmaria Verzini



<http://arxiv.org/abs/1903.12036>

A ring of symmetric Hermitian modular forms of degree 2 with integral Fourier coefficients  
Toshiyuki Kikuta

<http://arxiv.org/abs/1903.12642>

The “Sphered Cube”: A New Method for the Solution of Partial Differential Equations in Cubical Geometry

Keaton J. Burns, Daniel Lecoanet, Geoffrey M. Vasil, Jeffrey S. Oishi, Benjamin P. Brown

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A multi-variable version of the completed Riemann zeta function and other  $L$ -functions  
Francis Brown

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Chebyshev polynomials and best rank-one approximation ratio

Andrei Agrachev, Khazhgali Kozhasov, André Uschmajew

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Euler and Laplace integral representations of GKZ hypergeometric functions

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<http://arxiv.org/abs/1904.00578>

On the circle,  $GMC^\gamma = C\beta E_\infty$  for  $\gamma = \sqrt{2/\beta}$ ,  $\gamma \leq 1$

Reda Chhaibi, Joseph Najnudel

<http://arxiv.org/abs/1904.01253>

An algorithm of computing cohomology intersection number of hypergeometric integrals

Saiei-Jaeyeong Matsubara-Heo, Nobuki Takayama

<http://arxiv.org/abs/1904.01472>

Stochastic Loewner Evolutions, Fuchsian Systems and Orthogonal Polynomials

Igor Loutsenko, Oksana Yermolayeva

<http://arxiv.org/abs/1904.01767>

Transformation and summation formulas for basic hypergeometric series associated with the circumference ratio

Chuanan Wei

<http://arxiv.org/abs/1904.01827>

Applications of generalized trigonometric functions with two parameters II

Shingo Takeuchi

<http://arxiv.org/abs/1904.01859>

Creating new distributions using integration and summation by parts

Rose Baker

<http://arxiv.org/abs/1904.02017>

Poly-Sinc Solution of Stochastic Elliptic Differential Equations

Maha Youssef, Roland Pulch

<http://arxiv.org/abs/1904.02088>

Spectra of elliptic potentials and supersymmetric gauge theories

Wei He

<http://arxiv.org/abs/1904.02879>

Note on Coleman's formula for the absolute Frobenius on Fermat curves  
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Connection problem for the generalized hypergeometric function  
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<http://arxiv.org/abs/1904.03334>

Riesz transforms for Dunkl transforms on  $L^\infty(m_k)$  and Dunkl-type *BMO* space  
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Discrete Laplace Method and Truncation Error of Gauss Continued Fraction  
Katsunori Iwasaki

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Numerical solution of scattering problems using a Riemann–Hilbert formulation  
Stefan G. Llewellyn Smith, Elena Luca

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A canonical form of the hypergeometric equation and transformation formulas  
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Adiabatic limits, Theta functions, and geometric quantization  
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<http://arxiv.org/abs/1904.04349>

Universality for conditional measures of the Bessel point process  
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Asymptotics of polynomials orthogonal over circular multiply connected domains  
James Henegan, Erwin Miña–Díaz

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Wreath Macdonald polynomials as eigenstates  
Joshua Jeishing Wen

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Zeta–polynomials, Hilbert polynomials, and the Eichler–Shimura identities  
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A note on small gaps between zeros of the Riemann zeta–function  
D. A. Goldston, C. L. Turnage–Butterbaugh

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Andreas E. Kyprianou, Juan Carlos Pardo, Matija Vidmar

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Absence of irreducible multiple zeta-values in melon modular graph functions  
Eric D'Hoker, M. B. Green

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Connection Formulae for Asymptotics of the Fifth Painlevé Transcendent on the Imaginary Axis: I  
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Zheng Shi, Huan Zhang, Guanghua Yang, Shaodan Ma

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An elliptic analogue of Fukuhara's trigonometric identities  
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Alice Le Brigant, Stéphane Puechmorel

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Ridha Nasri, Alain Simonian, Fabrice Guillemin

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On the space of theta functions for a prime level  
Kennichi Sugiyama

<http://arxiv.org/abs/1904.08589>

Transfinite diameter with generalized polynomial degree  
Sione Ma'u

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Pointwise summability of Fourier-Laguerre series of integrable functions  
Maciej Kubiak, Włodzimierz Lenski, Boogdan Szal

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Olimjon Eshkobilov, Emilio Musso, Lorenzo Nicolodi

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A new sum rule for Clebsch–Gordan coefficients using generalized characters of irreducible representations of the rotation group  
Jean–Christophe Pain

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On matrix product ansatz for Asymmetric Simple Exclusion Process with open boundary in the singular case  
Włodzimierz Bryc, Marcin Swieca

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A Müntz–Collocation spectral method for weakly singular Volterra integral equations  
Dianming Hou, Yumin Lin, Chuanju Xu

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Multiple zeta values and iterated log–sine integrals  
Ryota Umezawa

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6+infinity new expressions for the Euler–Mascheroni constant  
Marek Wolf

<http://arxiv.org/abs/1904.09880>

Two double–angle formulas of generalized trigonometric functions  
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Algebraic relations of interpolated multiple zeta values  
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An identity for the number of partitions  $(\text{mod } \ell)$  of  $n$   
Quentin Gazda

<http://arxiv.org/abs/1904.10751>

A pseudo-spectral splitting method for linear dispersive problems with transparent boundary conditions

Lukas Einkemmer, Alexander Ostermann, Mirko Residori

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Stokes matrices for unramified confluent hypergeometric equations

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Orthogonal polynomials and Möbius transformations

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<http://arxiv.org/abs/1904.11051>

Large Oscillations of the Argument of the Riemann Zeta-function

Kamalakshya Mahatab

<http://arxiv.org/abs/1904.11149>

Self-avoiding walk on the complete graph

Gordon Slade

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A physicist's guide to explicit summation formulas involving zeros of Bessel functions and related spectral sums

Denis S. Grebenkov

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Symmetry problems in harmonic analysis

Alexander G. Ramm

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A semicircle law and decorrelation phenomena for iterated Kolmogorov loops

Karen Habermann

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A rectangular additive convolution for polynomials

Aurelien Gribinski, Adam W. Marcus

<http://arxiv.org/abs/1904.12459>

A Closed Form Approximation of Moments of New Generalization of Negative Binomial Distribution

Sudip Roy, Ram C. Tripathi, N. Balakrishnan

<http://arxiv.org/abs/1904.12509>

Comment on "Fourier transform of hydrogen-type atomic orbitals", Can. J. Phys. Vol. 96, 724 – 726 (2018) by N. Yükcü and S. A. Yükcü

Ernst Joachim Weniger

<http://arxiv.org/abs/1904.13110>

Block preconditioning of stochastic Galerkin problems: New two-sided guaranteed spectral bounds

Marie Kubínová, Ivana Pultarová

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On infinite Jacobi matrices with a trace class resolvent  
Pavel Stovicek

<http://arxiv.org/abs/1904.13371>

A hierarchy of Palm measures for determinantal point processes with gamma kernels  
Alexander I. Bufetov, Grigori Olshanski

Topic #5      ———      OP – SF Net 26.3      ———      May 15, 2019

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](mailto:howard.cohl@nist.gov), or [spost@hawaii.edu](mailto:spost@hawaii.edu).

Contributions to OP–SF NET 26.4 should be sent by July 1, 2019.

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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](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)

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Andrei Martínez–Finkelshtein, Vice Chair  
Sarah Post, Program Director  
Yuan Xu, Secretary

The appointed officers are:

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



Topic #6 ——— OP – SF Net 26.3 ——— May 15, 2019

From: OP-SF Net Editors

Subject: Thought of the Month by **Aristotle**

The mathematical sciences particularly exhibit order, symmetry, and limitation; and these are the greatest forms of the beautiful.

**Aristotle** (384–322 BC), *Metaphysica* Δ, *Corpus Aristotelicum*, 3–1078b.