O P-S F N E T - Volume 31, Number 4 - July 15, 2024

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 to OPSF Activity Group members and non-members alike through the OP-SF Talk listsery.

If you are interested in subscribing to the Newsletter and/or OP-SF Talk, or if you would like to submit a topic to the Newsletter or a contribution to OP-SF Talk, please send an email to the OP-SF Net Editors.

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Topics:

- 1. Announcement: Call for the next OPSFA meeting: OPSFA-18
- 2. Announcement: OPSF-S10 Summer School in Rome, Italy
- 3. Report: OPSFA-17 in Granada, Spain by Fernández
- 4. Report: OPSFA-17 in Granada, Spain by Van Assche
- 5. Report: Analysis and Applications in honor of Roderick Wong in Hong Kong by Dai
- 6. Report: Journées Approximation, Lille, France by Van Assche
- 7. Book Description: Proceedings of 2nd Intl. Workshop on Quantum Nonstationary Systems
- 8. Preprints in arXiv.org
- 9. Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)
- 10. Thought of the Month by Lagrange

Calendar of Events:

July 15-19, 2024

9th European Congress of Mathematics Seville, Spain

https://www.ecm2024sevilla.com/

Mini-Symposium on *Special Functions, Orthogonal Polynomials, q-Series and Applications* Organized by Howard Cohl, Roberto S. Costas-Santos and Robert Maier

Mini-Symposium on *Orthogonal Polynomials and Specials Functions*Organized by Mirta María Castro Smirnova, Ignacio Nahuel Zurrián
and Manuel Domínguez de la Iglesia

July 29-August 2, 2024

Second Analysis Mathematica International Conference Alfréd Rényi Institute of Mathematics, Budapest, Hungary https://conferences.renyi.hu/2nd-analysis-mathematica-conference/home

September 4-7, 2024

Approximation Theory and Special Functions (ATSF 2024)
Dedicated to the retirement of George Anastassiou
TOBB Economics and Technology University, Ankara, Türkiye
https://sites.google.com/view/atsf2024

December 9-13, 2024

Joint meeting of the NZMS, AustMS and AMS Auckland, New Zealand

Special Session on *Special Functions*, *q-Series and Beyond* Organized by Howard Cohl, Ole Warnaar, Nicholas Witte

May 19-22, 2025

Constructive Functions 2025
Celebrating Ed Saff's 80th birthday
in conjunction with the 37th Shanks Lecture by Doron Lubinsky
Vanderbilt University, Nashville, Tennessee, USA
https://my.vanderbilt.edu/constructivefunctions2025/

June 23-28, 2025

Combinatorics around the *q*-Onsager algebra A celebration of the 70th birthday of Paul Terwilliger Kranjska Gora, Slovenia https://conferences.famnit.upr.si/event/15/overview

Topic #1 — OP - SF Net 31.4 — July 15, 2024

From: Teresa Perez (tperez@ugr.es)

Subject: Announcement: Call for the next OPSFA meeting: OPSFA-18

The OPSFA steering committee is inviting submissions for the organization of the next meeting, OPSFA-18, in 2026. If you are interested in hosting OPSFA-18, then please send a message to Luc Vinet (luc.vinet@umontreal.ca) and/or Peter Clarkson (luc.vinet@umontreal.ca).

The deadline is: September 30, 2024.

The application consists in a brief (approx. 2 pages) description of the proposed meeting.

The guidelines for preparing your proposal can be found here, and in particular, should include:

- The location and a description of the facilities (lecture rooms, meals);
- The proposed dates:
- The organizing committee members;
- The proposed format (plenary talks, parallel sessions and/or mini-symposia);
- Availability and price of hotels, student accommodation;
- Estimated registration fee; discount for students and/or participants from developing countries?
- The connection to the international OPSFA community at large;
- Travel: nearby airports, other means of transportation;
- Any special research directions intended;
- How will you deal with Equity, Diversity, Inclusion?

The adjudication will be made in October 2024 by the Steering Committee which is composed of Peter Clarkson (chair; SIAG/OPSF representative), Howard Cohl, Ana F. Loureiro, Christoph Koutschan, Luc Vinet, and Miguel Pinar.

Topic #2 — OP - SF Net 31.4 — July 15, 2024

From: Clemente Cesarano (clemente.cesarano@uninettunouniversity.net)

Subject: Announcement: OPSF-S10 Summer School in Rome, Italy

As we announced in January, the 10th Summer School of OPSFA will be held in Rome, Italy from July 29th to August 2nd, 2024. The goal of the school is to provide participants with knowledge, methods and tools related to the field of orthogonal polynomials and special functions, as well as different applications. The 2024 summer school is part of a series of OPSFA-summer schools.

Lecturers:

- Francisco Jose Marcellán Español, Univeridad Carlos III, Spain;
- Nicola Mastronardi, Istituto Applicazioni Calcolo, CNR, Bari, Italy;
- Mehmet Ali Özarslan, Eastern Mediterranean University, Northern Cyprus;
- Henrik Laurberg Pedersen, University of Copenhagen, Denmark; and
- Paolo Emilio Ricci, UniNettuno University, Italy.

The deadline for registration is July 1st 2024.

All the information and the registration form can be found here:

https://sites.google.com/uninettunouniversity.net/opsfa-summer-school/home

Clemente Cesarano,

The Director of the School, Section of Mathematics, UniNettuno University, Rome, Italy.

Topic #3 — OP – SF Net 31.4 — July 15, 2024

From: Lidia Fernández (lidiafr@ugr.es)

Subject: Report: OPSFA-17 in Granada, Spain by Fernández

Between June 24 and 28, the IMAG OPSFA-17 conference on Orthogonal Polynomials, Special Functions, and Applications was held in the city of Granada, dedicated to the memory of André Ronveaux (1932–2023) and Pascal Maroni (1933–2024). This conference, which brings together specialists from around the world approximately every two years, was first held in 1984 in Bar-le-Duc and has continued uninterrupted up to this edition, demonstrating its vitality and the commitment of the scientific community working in this area of mathematical research.

Summarizing the structure of such a significant event in a few words is difficult—and even unfair—but it is evident that it is always a success to gather people from 28 different countries and five continents in a city and a university environment with the primary goal of working and debating mathematics for five days. According to the feedback received from participants, this goal has been achieved, as it has been in previous editions of OPSFA.

The conference featured contributions from 9 plenary speakers (Rabia Aktas Karaman, Marco Bertola, Claude Brezinski, Annie Cuyt, Benjamin Eichinger, Ujué Etayo, Andrei Martínez-Finkelshtein, Inés Pacharoni, Aron Wennman), one invited speaker (Francisco Marcellán), 68 contributed talks, and 9



Figure 1: Group photo of OPSFA-17 in Granada, Spain.

posters. We would like to highlight that, thanks to the support of IMAG at the University of Granada, 15 scholarships for full-board accommodation were awarded to students who participated in the conference and 25 reduced fee grants for students and people from developing countries.

The congress was structured into morning and afternoon parallel sessions, as well as plenary lectures that took place early in the morning.

The detailed program and the book of abstracts can be consulted at the following link: https://opsfa17.ugr.es/schedule.html

The main topics covered in the various sessions included, among others, multiple, matrix, exceptional, Sobolev or multivariate orthogonal polynomials, special functions, and applications such as rational approximation, quadrature formulas, partial differential equations, etc. Participants also had the opportunity to share their time during lunch, which took place every day at a hotel near the Faculty of Sciences of the University of Granada, the congress venue.

Although June can be an extremely hot period in Granada, the temperatures were generally milder than usual, which was very positive for the congress's progress. In fact, on Wednesday night, the gala dinner was held at the Restaurante La Chumbera, a spectacular venue where attendees enjoyed food and drink with privileged views of the Alhambra, an indescribable and unique sight worldwide.

The Organizing Committee of the congress would like to thank all the entities that provided financial and logistical support, making this scientific meeting possible and ensuring its success: University of Granada (UGR), IMAG (Institute of Mathematics of the University of Granada), María de Maeztu Excellence Unit, Faculty of Sciences of the UGR, and Department of Applied Mathematics of the UGR.

From: Walter Van Assche (walter.vanassche@kuleuven.be) Subject: Report: OPSFA-17 in Granada, Spain by Van Assche

Orthogonal Polynomials, Special Functions and their Applications (OPSFA17), Granada (Spain), 24-28 June, 2024



Figure 2: The local organizing committee: Lidia Fernández, Antonia Delgado, Teresa Pérez, Miguel Piñar, Joaquin Sánchez-Lara.

Every two years an international conference/symposium on Orthogonal Polynomials, Special Functions and their Applications is organized and this is always an excellent opportunity to learn about new developments in the field and to meet old and new friends and to discuss recent research results with them. This year was the 40th anniversary of the first meeting in Bar-le-Duc (France) in 1984. That meeting was initiated by Claude Brezinski, André Draux, Alphonse Magnus, Pascal Maroni and André Ronveaux to celebrate the 150th anniversary of Laguerre, who was born and died in Bar-le-Duc. Two of the organizers of that meeting recently passed away and the present seventeenth meeting was dedicated to them: André Ronveaux (June 19, 1932 – December 31, 2023) and Pascal Maroni (January 17, 1933 – January 16, 2024). The opening session devoted one invited lecture (by Francisco Marcellán) to honour both.

It was a while ago since 2019 when we met in person for this meeting in Hagenberg, Austria. True, we



Figure 3: Young and old at OPSFA17. Ted Chihara (95) with some of the Granada students.

had an OPSFA conference in 2022 which was planned in Montréal in 2021 but this was postponed to 2022 because of the coronavirus and even then it was an online meeting, dedicated to Richard Askey (1933–2019). We really wanted to have a real live meeting again and the Granada meeting made our wishes come true. The local organizing committee (Miguel Piñar, Teresa Pérez, Lidia Fernández, Antonia Degado and Joaquin Sánchez-Lara) succeeded in putting together an interesting programme with nine plenary talks and several contributed talks in three parallel sessions. The plenary talks were:

- Rabia Aktaş Karaman: Fourier transforms of multivariate orthogonal polynomials,
- Annie Cuyt: On orthogonality, rational approximation, quadrature and exponential analysis in one and more variables,
- Aron Wennman: Asymptotics and zeros of orthogonal polynomials in the plane,
- Andrei Martínez-Finkelshtein: Hypergeometric polynomials with free probability tools,
- Claude Brezinski: The birth of orthogonal polynomials,
- Marco Bertola: Padé approximants and orthogonality beyond the sphere,
- Inés Pacharoni: Matrix Bochner problem and Darboux transformations,
- Ujué Etayo: A role of orthogonal polynomials on the equidistribution of points on manifolds,
- Benjamin Eichinger: Universality limits via canonical systems.

The plenary speakers were a nice gender balanced selection of established researchers and young upcoming talents with talks ranging from the history of orthogonal polynomials (the dispute between Legendre and Laplace) to modern applications and new tools to study orthogonal polynomials and

special functions. The parallel sessions covered many topics such as polynomials and special functions with several variables, multiple orthogonal polynomials, numerical aspects, Sobolev orthogonal polynomials, q-polynomials, exceptional orthogonal polynomials, asymptotic methods, zeros of orthogonal and quasi-orthogonal polynomials, recurrence relations, and random point processes.

The local organizers also did a good job with the coffee breaks, the lunches at a nearby hotel and the conference dinner with a nice view of the Alhambra at night. One of the most asked questions was: "what happened with the Szegő prize?" It turned out that SIAM did not organize a selection for this prize and therefore there was no Szegő lecture. The situation is even more delicate: currently the SIAM Activity Group seems to be on hold with no officers. We certainly hope that this situation can be clarified and that the Szegő prize is reinstated as soon as possible.

Topic #5 — OP - SF Net 31.4 — July 15, 2024

From: Dan Dai (dandai@cityu.edu.hk)

Subject: Report: Analysis and Applications in honor of Roderick Wong in Hong Kong by Dai

Report on International Conference on Analysis and Applications 2024 (ICAA2024), dedicated to Roderick S. C. Wong's 80th birthday

This conference was an international conference held at City University of Hong Kong, from June 3 to June 6, 2024, to celebrate Prof. Roderick S. C. Wong's 80th birthday. Roderick Wong is a leading figure in the field of asymptotic analysis, orthogonal polynomials, special functions, perturbation methods, and their applications. Having spent nearly 25 years at the University of Manitoba, Canada, he joined City University of Hong Kong in 1994, where he played a pivotal role in establishing the Department of Mathematics and the Liu Bie Ju Centre for Mathematical Sciences. Throughout his tenure at CityU HK, Roderick organized numerous events that fostered communication and collaboration between the Chinese mathematical community and colleagues from around the world.

In the conference, there were 10 plenary talks delivered by Huaxiong Huang, Nalini Joshi, Dany Leviatan, Chun Liu, Peter Miller, Adri B. Olde Daalhuis, Walter Van Assche, Michael Ward, Yang Wang, and Juncheng Wei. Additionally, there were 17 invited talks and 9 contributed talks, making for a diverse and engaging program. The conference programme covered a wide range of interesting subjects related to analysis and its applications (a journal named Analysis and Applications was established by Roderick in 2003). The talks encompassed various topics, such as Asymptotics for (multiple) little *q*–Jacobi polynomials (by Walter van Assche), Universality in the small–dispersion limit of the Benjamin–Ono Equation (by Peter Miller), and Generative adversarial nets (GAN) (by Yang Wang), among others.

Throughout the talks, quite a few memorable photographs were shared, evoking reminiscences of Roderick's extensive and fruitful academic career. The presentations stimulated lively discussions, greatly enjoyed by both Roderick and all the participants.

Topic #6 — OP - SF Net 31.4 — July 15, 2024

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

Subject: Report: Journées Approximation, Lille, France by Van Assche

Journées Approximation, 6th Edition, Lille, France, 15–17 May 2024.

The research group in approximation theory and numerical numerical analysis at the University of Lille in France (formerly Université des Sciences et Technologies de Lille, but now absorbed in the larger Université de Lille) has organized several Journées Approximation (Approximation Days) in the past





Figure 4: Roderick Wong with a warm welcome to all his friends at his 80th birthday conference (top). Group photo for the attendees of the 80th birthday Roderick Wong conference (bottom).



Figure 5: Group photo at Journées Approximation, Lille, France, 15-17 May 2024.

few decades and this year they put together the sixth edition. This international conference aims at giving the opportunity for exchanging ideas of people working on approximation theory, numerical linear algebra and their applications, in particular researchers from France, Belgium and other European countries. The organizing committee consisted of Berhard Beckermann, Ana Matos and Laurent Smoch and they invited 20 international experts to give a talk about their recent work. A selection of the topics covered: polynomial and rational convergence for Laplace problems on planar domains (Nick Trefethen), various talks on multiple orthogonal polynomials (Maxim Yattselev, Walter Van Assche, Amilcar Branquinho), Sobolev orthogonal polynomials (Miguel Piñar) and Chebyshev polynomials (Jacob Christiansen), discrete Painlevé equations (Ana Loureiro) - very appropriate since the local research group is united in the Laboratoire Paul Painlevé), talks about interpolation (Oliver Salazar, Wen-shin Lee) and rational approximation (André Weideman, Laurent Baratchart), (numerical) linear algebra (Ana Foulquié Moreno), and many applications such as antenna array synthesis (Ramonika Sengupta), normal forms of integers (George Labahn), defects and dirt in test and measurement (Andreas Beutler), optimal prediction measures (Franck Wielonsky), fractional time derivatives (Yvonne Ou), parallel MRI reconstruction (Gerlind Plonka), exponential analysis in antenna applications (Dirk de Villiers), and approximation of positive polynomials for global optimization (Bernard Mourrain). There were 30-40 participants and we all enjoyed discussions during coffee breaks (with some posters) and lunch breaks. Lille is a wonderful city with excellent restaurants for dinner. The conference dinner was at a restaurant near the Stade Pierre Mauroy, a football stadium that will be used as one of the Olympique sites for the 2024 Olympique games.

Link to conference website with abstracts for the talks: https://indico.math.cnrs.fr/event/11523/.

Topic #7 — OP - SF Net 31.4 — July 15, 2024

From: Alexandre Dodonov (a.v.dodonov@gmail.com)

Subject: Book Description: Proceedings of 2nd Intl. Workshop on Quantum Nonstationary Systems

I would like to bring to your attention the book "Proceedings of the II International Workshop on Quantum Nonstationary Systems" (ISBN 978-65-5563-446-4), which can be viewed and downloaded for free at the websites:

http://www.cif.unb.br/eventos/proceedings-qns2

https://lfeditorial.com.br/produto/proceedings-of-the-second-international-workshop-on-quantum-nonstationary-systems/



Figure 6: Front Cover

This proceedings contains 19 chapters, which might be of interest of the community of SIAM Activity Group on Orthogonal Polynomials and Special Functions:

Chapter 1. Alexandre Dodonov and Caio Cesar Holanda Ribeiro. About the Workshops on Quantum Nonstationary Systems

Chapter 2. Viktor V. Dodonov and Alexandre Dodonov.

Adiabatic versus instantaneous transitions from a harmonic oscillator to an inverted oscillator

Chapter 3. Sergei K. Suslov.

The "Sommerfeld Puzzle" and Its Extensions



ABOUT THIS BOOK

This book of proceedings contains 19 chapters. The 1st chapter is written by the editors and describes the history of the Workshops on Quantum Nonstationary Systems, with photos of the participants. The remaining 18 chapters comprise original works in several fields of Quantum Mechanics written by the invited speakers: V.V. Dodonov and A. Dodonov; S.K. Suslov; J. Tito Mendonça; V.I. Yukalov and E.P. Yukalova; D. Valente; A. Vourdas; S.S. Mizrahi; J.P. Gazeau; Olavo L.S.F.; T. Mihaescu and A. Isar; A. Marinho and A. Dodonov; S.N. Belolipetskiy, V.N. Chernega, V.I. Grebenkin and O.V. Man'ko; G. Wilson and B.M. Garraway; C.C. Holanda Ribeiro; M.A. Man'ko and V.I. Man'ko; E.P. Glasbrenner, Y. Gerdes, S. Varró and W.P. Schleich; G. de Oliveira and L.C. Céleri; B. Goren, K.K. Barley and S.K. Suslov.



Figure 7: Back Cover

Chapter 4. J. Tito Mendonça.

Time-Refraction in Classical and Quantum Optics

Chapter 5. V. I. Yukalov and E. P. Yukalova.

Regulating spin dynamics of dipolar and spinor atoms

Chapter 6. D. Valente.

Quantum cloning in waveguide-QED inspired by nonequilibrium self-assembly

Chapter 7. A. Vourdas.

Quantumness according to Grothendieck quantities in a single finite quantum system

Chapter 8. Salomon S. Mizrahi.

Speed of disentanglement for a two-qubit system staged in a Minkowski space with compact support

Chapter 9. Jean-Pierre Gazeau.

Quantum regularisations of metric tensors

Chapter 10. Olavo L. S. F.

Non-Hamiltonian Quantization Method

Chapter 11. Tatiana Mihaescu and Aurelian Isar.

Dynamics of Entropy Production and Quantum Correlations in Two-Mode Gaussian Open Systems

Chapter 12. A. Marinho and A. Dodonov.

Analytic approach for dissipative semiclassical Rabi model under parametric modulation

Chapter 13. S. N. Belolipetskiy, V. N. Chernega, V. I. Grebenkin, and O. V. Man'ko.

The quantum states of inverted and usual oscillators and particle with spin-1/2 states in probability representation of quantum mechanics

Chapter 14. Gwyn Wilson and Barry M. Garraway.

Propagation of Non-Gaussian Wave-Packets in Two Dimensions

Chapter 15. Caio C. Holanda Ribeiro.

An exact solution for the quantum backreaction in a Bose-Einstein condensate.

Chapter 16. Margarita A. Man'ko and Vladimir I. Man'ko.

Probability distributions describing quantum states

Chapter 17. Eric P. Glasbrenner, Yannik Gerdes, Sándor Varró, and Wolfgang P. Schleich.

A different perspective on the Landau-Zener dynamics

Chapter 18. Gustavo de Oliveira and Lucas Chibebe Céleri.

Thermodynamics of the dynamical Casimir effect

Chapter 19. Ben Goren, Kamal K. Barley and Sergei K. Suslov.

Matrix Approach to Helicity States of Dirac Free Particles

Sincerely, Prof. Alexandre Dodonov

Director of the International Center of Physics

University of Brasilia, Brasilia - DF - Brazil

Topic #8 — OP - SF Net 31.4 — July 15, 2024

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 May and June 2024. This list has been separated into two categories.

OP-SF Net Subscriber E-Prints

http://arxiv.org/abs/2405.00120

Riesz Energy with a Radial External Field: When is the Equilibrium Support a Sphere? Djalil Chafaï, Ryan W. Matzke, Edward B. Saff, Minh Quan H. Vu, Robert S. Womersley

http://arxiv.org/abs/2405.03259

The Ising Model Coupled to 2D Gravity: Genus Zero Partition Function Maurice Duits, Nathan Hayford, Seung-Yeop Lee

http://arxiv.org/abs/2405.03294

On the generalized Dirichlet beta and Riemann zeta functions and Ramanujan-type formulae for beta and zeta values Semyon Yakubovich

http://arxiv.org/abs/2405.05159

Finding all solutions to the KZ equations in characteristic p Alexander Varchenko, Vadim Vologodsky

http://arxiv.org/abs/2405.05692

Meta Algebras and Biorthogonal Rational Functions: The Hahn Case Satoshi Tsujimoto, Luc Vinet, Alexei Zhedanov

http://arxiv.org/abs/2405.07934

Mordell-Tornheim zeta functions and functional equations for Herglotz-Zagier type functions Atul Dixit, Sumukha Sathyanarayana, N. Guru Sharan

http://arxiv.org/abs/2405.08208

Error bounds for a uniform asymptotic approximation of the zeros of the Bessel function $J_{\nu}(x)$ T. M. Dunster

http://arxiv.org/abs/2405.10438

Optimization-Aided Construction of Multivariate Chebyshev Polynomials Mareike Dressler, Simon Foucart, Etienne de Klerk, Mioara Joldes, Jean Bernard Lasserre, Yuan Xu

http://arxiv.org/abs/2405.10541

Segre surfaces and geometry of the Painlevé equations Nalini Joshi, Marta Mazzocco, Pieter Roffelsen

http://arxiv.org/abs/2405.10609

Quasi-polynomial extensions of nonsymmetric Macdonald-Koornwinder polynomials Jasper Stokman

http://arxiv.org/abs/2405.11050

Pathway to Fractional Integrals, Fractional Differential Equations and the Role of H-function Arak M. Mathai, Hans J. Haubold

General Christoffel Perturbations for Mixed Multiple Orthogonal Polynomials Manuel Mañas, Miguel Rojas

http://arxiv.org/abs/2405.11959

A common zero at the end point of the support of measure for the quasi-natured spectrally transformed polynomials

Vikash Kumar, A. Swaminathan

http://arxiv.org/abs/2405.12024

Polynomials and algebraic curves related to certain binary and b-ary overpartitions Karl Dilcher, Larry Ericksen

http://arxiv.org/abs/2405.14248

New identities for the Laplace, Glasser, and Widder potential transforms and their applications Abdulhafeez A. Abdulsalam, Ammar K. Mohammed, Hemza Djahel

http://arxiv.org/abs/2405.14771

Dunkl symmetric coherent pairs of measures. An application to Fourier Dunkl-Sobolev expansions Mabrouk Sghaier, Francisco Marcellán

http://arxiv.org/abs/2405.16349

Distribution of the Hessian values of Gaussian hypergeometric functions Ken Ono, Sudhir Pujahari, Hasan Saad, Neelam Saikia

http://arxiv.org/abs/2405.16429

On a Generalized Moment Integral containing Riemann's Zeta Function: Analysis and Experiment Michael Milgram, Roy Hughes

http://arxiv.org/abs/2405.18940

Brenke polynomials with real zeros and the Riemann Hypothesis Antonio J. Durán

http://arxiv.org/abs/2405.19219

Least multivariate Chebyshev polynomials on diagonally determined domains Mareike Dressler, Simon Foucart, Mioara Joldes, Etienne de Klerk, Jean-Bernard Lasserre, Yuan Xu

http://arxiv.org/abs/2406.00786

Euler Product Sieve

Di Liu, Yuri Matiyasevich, Joseph Oesterlé, Alexandru Zaharescu

http://arxiv.org/abs/2406.02954

A remarkable basic hypergeometric identity Christian Krattenthaler, Wadim Zudilin

http://arxiv.org/abs/2406.07104

On the extension for Toeplitz matrices of certain Markov inequalities K. Castillo, A. Suzuki

http://arxiv.org/abs/2406.07290

Semiclassical orthogonal polynomials on the unit circle: A Riemann-Hilbert perspective Amílcar Branquinho, Ana Foulquié-Moreno, Karina Rampazzi

Bessel potentials and Green functions on pseudo-Euclidean spaces Jan Dereziński, Bartłomiej Sikorski

http://arxiv.org/abs/2406.08503

Formulas of special polynomials involving Bernoulli polynomials derived from matrix equations and Laplace transform

Ezgi Polat, Yilmaz Simsek

http://arxiv.org/abs/2406.11269

A MATLAB package computing simultaneous Gaussian quadrature rules for Multiple Orthogonal Polynomials

Teresa Laudadio, Nicola Mastronardi, Walter Van Assche, Paul Van Dooren

http://arxiv.org/abs/2406.12049

Combinatorial interpretations of cranks of overpartitions and partitions into distinct odd parts F. G. Garvan, Rishabh Sarma

http://arxiv.org/abs/2406.12854

Time and band limiting for exceptional polynomials

M. M. Castro, F. A. Grünbaum, I. Zurrián

http://arxiv.org/abs/2406.15385

On a Generating Function for the Isotropic Basis Functions and Other Connected Results Zachary Slepian, Jessica Chellino, Jiamin Hou

http://arxiv.org/abs/2406.16345

Highly localized kernels on space of homogeneous type Yuan Xu

http://arxiv.org/abs/2406.19410

Mehta's eigenvectors for the finite Hartely transform Fethi Bouzeffour

Other Relevant OP-SF E-Prints

http://arxiv.org/abs/2405.00325

Asymptotics of Saran's hypergeometric function ${\cal F}_K$ Peng-Cheng Hang, Min-Jie Luo

http://arxiv.org/abs/2405.00404

Rotations and boosts of Hermite functions

Maro Cvitan, Predrag Dominis Prester, Stefano Giaccari, Mateo Paulišić, Ivan Vuković

http://arxiv.org/abs/2405.01219

Special values of Green's functions on hyperbolic 3-space Sebastián Herrero, Özlem Imamoglu, Anna-Maria von Pippich, Markus Schwagenscheidt

http://arxiv.org/abs/2405.01254

Optimal Lagrange Interpolation Projectors and Legendre Polynomials Mikhail Nevskii

Subordination Involving Gauss Hypergeometric Function Anish Kumar, Sourav Das

http://arxiv.org/abs/2405.01877

A divisor generating q-series identity and its applications to probability theory and random graphs Archit Agarwal, Subhash Chand Bhoria, Pramod Eyyunni, Bibekananda Maji

http://arxiv.org/abs/2405.02776

Hypergeometric accelerations with shifted indices John M. Campbell

http://arxiv.org/abs/2405.02854

On gamma functions with respect to the alternating Hurwitz zeta functions Wanyi Wang, Su Hu, Min-Soo Kim

http://arxiv.org/abs/2405.02902

A solution in terms of mock modular forms for the q-Painlevé equation of the type $(A_2+A_1)^{(1)}$ Satoshi Tsuchimi

http://arxiv.org/abs/2405.02915

Mellin transform formulas for Drinfeld modules Oğuz Gezmiş, Nathan Green

http://arxiv.org/abs/2405.02932

Extremizers for the Rogosinski - Szegő estimate of the second coefficient in nonnegative sine polynomials

Dmitriy Dmitrishin, Alexander Stokolos, Walter Trebels

http://arxiv.org/abs/2405.02988

Ladder operators for generalized Zernike or disk polynomials Misael E. Marriaga

http://arxiv.org/abs/2405.03015

Product formulas for the Higher Bessel functions Ilia Gaiur, Vladimir Rubtsov, Duco van Straten

http://arxiv.org/abs/2405.03115

Unified bounds for the independence number of graphs Jiang Zhou

http://arxiv.org/abs/2405.03260

The Ising Model Coupled to 2D Gravity: Higher-order Painlevé Equations/The (3,4) String Equation Nathan Hayford

http://arxiv.org/abs/2405.03347

Perfect codes over non-prime power alphabets: an approach based on Diophantine equations Pedro-José Cazorla García

http://arxiv.org/abs/2405.03936

Zero order meromorphic solutions of q-difference equations of Malmquist type Risto Korhonen, Yueyang Zhang

Explicit estimates for the logarithmic derivative and the reciprocal of the Riemann zeta-function Nicol Leong

http://arxiv.org/abs/2405.05067

Computing Chebyshev polynomials using the complex Remez algorithm Olof Rubin

http://arxiv.org/abs/2405.05264

Two integral representations for the logarithm of the Glaisher-Kinkelin constant Jean-Christophe Pain

http://arxiv.org/abs/2405.05271

A mean value inequalities for the polygamma and zeta functions Mohamed Bouali

http://arxiv.org/abs/2405.05280

Monotonicity and inequalities for the ratios of two Bernoulli polynomials Zhen-Hang Yang, Feng Qi

http://arxiv.org/abs/2405.05628

Calculation of 6j-symbols for the Lie algebra \mathfrak{gl}_n Dmitry Artamonov

http://arxiv.org/abs/2405.05810

Series involving rational, factorial and power functions Robert Reynolds

http://arxiv.org/abs/2405.05896

A note on the volume entropy on harmonic manifolds of hypergeometric type Hiroyasu Satoh

http://arxiv.org/abs/2405.05995

Absolute zeta functions and periodicity of quantum walks on cycles Jirô Akahori, Norio Konno, Iwao Sato, Yuma Tamura

http://arxiv.org/abs/2405.06280

Green's Function and Pointwise Space-time Behaviors of the Three-Dimensional Relativistic Boltzmann Equation

Yanchao Li, Mingying Zhong

http://arxiv.org/abs/2405.06314

Applications of the Painlevé-Kuratowski convergence: Lipschitz functions with converging Clarke subdifferentials and convergence of sets defined by converging equations Daniel Fatuła

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Hypergeometric Distribution Revisited: Tail Inequalities, Confidence Bounds and Sample Sizes Anne-Marie George

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Improved bounds for polylogarithmic graph distances in scale-free percolation and related models Kostas Lakis, Johannes Lengler, Kalina Petrova, Leon Schiller

Approximation by a new sequence of operators involving Laguerre polynomials Kapil Kumar, Naokant Deo, Durvesh Kumar Verma

http://arxiv.org/abs/2405.08129

Wavelets for $L^2(B(0,1))$ using Zernike polynomials Somantika Datta, Kanti B. Datta

http://arxiv.org/abs/2405.08140

Entropy numbers of Reproducing Hilbert Space of zonal positive definite kernels on compact two-point homogeneous spaces

Karina Gonzalez, Thaís Jordão

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Double orbits of weakly almost periodic functions Ching Chou

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Pfaff's Method Revisited

Aritram Dhar

http://arxiv.org/abs/2405.08725

Lower bounds for shifted moments of the Riemann zeta function Michael J. Curran

http://arxiv.org/abs/2405.09158

Renormalized spectral zeta function and ground state of Rabi model Fumio Hiroshima, Tomoyuki Shirai

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Scaling Symmetry Reductions of Coupled KdV Systems Allan P. Fordy

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http://arxiv.org/abs/2405.11084

Shifting the ordinates of zeros of the Riemann zeta function William D. Banks

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First Order Linear Proportional Difference Equation with Integration Factor the (s,t)-Pantograph Function

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Generalized β and (q,t)-deformed partition functions with W-representations and Nekrasov partition functions

Fan Liu, Rui Wang, Jie Yang, Wei-Zhong Zhao

Optimal tail estimates in β -ensembles and applications to last passage percolation Jnaneshwar Baslingker, Riddhipratim Basu, Sudeshna Bhattacharjee, Manjunath Krishnapur

http://arxiv.org/abs/2405.12506

Upper bounds for moments of zeta sums Peng Gao

http://arxiv.org/abs/2405.12545

An explicit log-free zero density estimate for the Riemann zeta-function Chiara Bellotti

http://arxiv.org/abs/2405.12557

On the approximation of the Hardy Z-function via high-order sections Yochay Jerby

http://arxiv.org/abs/2405.12567

Marginal and training-conditional guarantees in one-shot federated conformal prediction Pierre Humbert, Batiste Le Bars, Aurélien Bellet, Sylvain Arlot

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Representability of G-functions as rational functions in hypergeometric series Thomas Dreyfus, Tanguy Rivoal

http://arxiv.org/abs/2405.12657

On Edwards' Speculation and a New Variational Method for the Zeros of the Z-Function Yochay Jerby

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Symmetries of weight 6 multiple polylogarithms and Goncharov's Depth Conjecture Steven Charlton

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Discrete Hankel Prolate Spheroidal Wave Functions: Spectral Analysis and Application Boulsane Mourad

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Floer-theoretic filtration on Painlevé Hitchin systems Szilárd Szabó, Filip Živanović

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On some Analytic Inequalities for Gauss Hypergeometric Functions via Gruss Discrete Inequality Mustapha Raissouli, Mohamed Chergui

http://arxiv.org/abs/2405.14958

Dirichlet Scalar Determinants On Two-Dimensional Constant Curvature Disks Soumyadeep Chaudhuri, Frank Ferrari

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Series Associated with Harmonic Numbers, Fibonacci Numbers and Central Binomial Coefficients $\binom{2n}{n}$ Akerele Olofin Segun

http://arxiv.org/abs/2405.16927

The role of spatial dimension in the emergence of localised radial patterns from a Turing instability Dan J. Hill

http://arxiv.org/abs/2405.16986

Analysis of scalar fields with series convolution Emir Baysazan, Tolga Birkandan, Ismail Eyuphan Unver

http://arxiv.org/abs/2405.17063

On Laplace equation solution in orthogonal similar oblate spheroidal coordinates Pavel Strunz

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An asymptotic expansion for a Lambert series associated to Siegel cusp forms of degree n Babita, Abhash Kumar Jha, Bibekananda Maji, Manidipa Pal

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Sparsification of Phylogenetic Covariance Matrices of k-Regular Trees Sean S. Svihla, Manuel E. Lladser

http://arxiv.org/abs/2405.17943

Shift-invariant subspaces of Sobolev type Aleksandar Aksentijević, Suzana Aleksić

http://arxiv.org/abs/2405.18182

Drawing with Distance Bart Jacobs

http://arxiv.org/abs/2405.19115

Full Asymptotic Expansion of Monodromy Data for the First Painlevé Transcendent: Applications to Connection Problems

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http://arxiv.org/abs/2405.19368

The BiGamma Function and some of its Related Inequalities Mustapha Raissouli, Mohamed Chergui

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Unifying trigonometric and hyperbolic function derivatives via negative integer order polylogarithms Andrew Ducharme

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Asymptotic expansion for the Fourier coefficients associated with the inverse of the modular discriminant function Δ Gargi Mukherjee

Absolutely monotonic functions related to the asymptotic formula for the complete elliptic integral of the first kind

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http://arxiv.org/abs/2405.20190

Motivic classes of curvilinear Hilbert schemes and Igusa zeta functions Ilaria Rossinelli

http://arxiv.org/abs/2405.20294

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http://arxiv.org/abs/2405.20394

Monodromy groups and exceptional Hodge classes Andrea Gallese, Heidi Goodson, Davide Lombardo

http://arxiv.org/abs/2405.20552

New large value estimates for Dirichlet polynomials Larry Guth, James Maynard

http://arxiv.org/abs/2405.20955

Number of distinct and common sites visited by N independent random walkers Satya N. Majumdar, Gregory Schehr

http://arxiv.org/abs/2406.00064

Integration Formulas Involving Fibonacci and Lucas Numbers Kunle Adegoke, Robert Frontczak

http://arxiv.org/abs/2406.00206

Frobenius intertwiners for q-difference equations Andrey Smirnov

http://arxiv.org/abs/2406.00331

On the Lindelöf Hypothesis for the Riemann Zeta function Lahoucine Elaissaoui

http://arxiv.org/abs/2406.00567

Formulas for odd zeta values and powers of π Marc Chamberland, Patrick Lopatto

http://arxiv.org/abs/2406.00849

Simple bounds for the extreme zeroes of Jacobi polynomials Geno Nikolov

http://arxiv.org/abs/2406.01437

Computing the Action of the Generating Function of Bernoulli Polynomials on a Matrix with An Application to Non-local Boundary Value Problems Lidia Aceto, Luca Gemignani

Report on some papers related to the function $\mathcal{R}(s)$ found by Siegel in Riemann's posthumous papers J. Arias de Reyna

http://arxiv.org/abs/2406.02244

On the characterization of chordal graphs using Horn hypergeometric series Dipnit Biswas, Irfan Habib, R. Venkatesh

http://arxiv.org/abs/2406.02747

On the hypergeometric function and families of holomorphic functions Mark Elin, Fiana Jacobzon

http://arxiv.org/abs/2406.02752

Multidimensional analogs of the Fekete-Szegő functional Mark Elin, Fiana Jacobzon

http://arxiv.org/abs/2406.02894

The Bunching and Monotonicity Properties of Families of Probability Distributions S. Portnoy, N. Torrado, J. J. P. Veerman

http://arxiv.org/abs/2406.03041

Statistic of zeros of Riemann auxiliary function J. Arias de Reyna

http://arxiv.org/abs/2406.03281

Constructing efficient spatial discretizations of spans of multivariate Chebyshev polynomials Lutz Kämmerer

http://arxiv.org/abs/2406.03825

Regions without zeros for the auxiliary function of Riemann Juan Arias de Reyna

http://arxiv.org/abs/2406.04714

Asymptotic Expansions of the auxiliary function Juan Arias de Reyna

http://arxiv.org/abs/2406.05104

New results on biorthogonal families in cylindrical domains and controllability consequences F. Ammar Khodja, A. Benabdallah, M. González-Burgos, M. Morancey, L. de Teresa

http://arxiv.org/abs/2406.06094

Elliptic Units Above Fields With Exactly One Complex Place Pierre L. L. Morain

http://arxiv.org/abs/2406.06548

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http://arxiv.org/abs/2406.06557

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http://arxiv.org/abs/2406.07968

On Siegel results about the zeros of the auxiliary function of Riemann Juan Arias de Reyna

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http://arxiv.org/abs/2406.08608

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http://arxiv.org/abs/2406.08890

On the number of zeros of $\mathcal{R}(s)$ Juan Arias de Reyna

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Trivial zeros of Riemann auxiliary function Juan Arias de Reyna

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Schottky-Kronecker forms and hyperelliptic polylogarithms
Konstantin Baune, Johannes Broedel, Egor Im, Artyom Lisitsyn, Federico Zerbini

http://arxiv.org/abs/2406.10604

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http://arxiv.org/abs/2406.10896

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http://arxiv.org/abs/2406.11947

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http://arxiv.org/abs/2406.13456

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http://arxiv.org/abs/2406.13459

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AGZT-Lectures on formal multiple zeta values Annika Burmester, Niclas Confurius, Ulf Kühn

http://arxiv.org/abs/2406.14262

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Density theorems for Riemann's auxiliary function Juan Arias de Reyna

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Elliptic Deformation of the Gaiotto-Rapčák Corner VOA and the Associated Partially Symmetric Polynomials

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On the approximation of the zeta function by Dirichlet polynomials Juan Arias de Reyna

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An expression for Riemann Siegel function Juan Arias de Reyna

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Infinitely divisible modified Bessel distributions Árpád Baricz, Dhivya Prabhu K, Sanjeev Singh, Antony Vijesh V

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http://arxiv.org/abs/2406.18968

Integral Representation for Riemann-Siegel Z(t) function Juan Arias de Reyna

http://arxiv.org/abs/2406.19187

Explicit Hamiltonian representations of meromorphic connections and duality from different perspec-

tives: a case study

Mohamad Alameddine, Olivier Marchal

Lommel functions, Padé approximants and hypergeometric functions Federico Zullo

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A new deformation of multiple zeta value Yoshihiro Takeyama

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Canonical heights, periods and the Hurwitz zeta function Rolf Andreasson, Robert J. Berman

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Reflection operator and hypergeometry I: $SL(2,\mathbb{R})$ spin chain P. Antonenko, N. Belousov, S. Derkachov, S. Khoroshkin

http://arxiv.org/abs/2406.19864

Reflection operator and hypergeometry II: $SL(2,\mathbb{C})$ spin chain P. Antonenko, N. Belousov, S. Derkachov, P. Valinevich

http://arxiv.org/abs/2406.19921

Lefschetz decompositions of Kudla-Millson theta functions Jan Hendrik Bruinier, Riccardo Zuffetti

Topic #9 — OP - SF Net 31.4 — July 15, 2024

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 spost@hawaii.edu.

Contributions to OP-SF NET 31.5 should be sent by September 1, 2024.

OP-SF NET is the electronic newsletter of the SIAM Activity Group on Special Functions and Orthogonal Polynomials (SIAG/OPSF). 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 OP-SF Talk which is currently managed and moderated by Howard Cohl (howard.cohl@nist.gov). Anyone wishing to be included in the mailing list (SIAG/OPSF members and non-members alike) should send an email expressing interest to him. Bonita Saunders also posts the Newsletter through SIAM Engage (SIAG/OPSF) which is received by all SIAG/OPSF members.

OP-SF Talk is a listserv associated with SIAG/OPSF which facilitates communication among members, non-members and friends of the Activity Group. To post an item to the listserv, send e-mail to howard.cohl@nist.gov.

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 (2020–2022*) are:

Peter Alan Clarkson, Chair

Luc Vinet, Vice Chair

Andrei Martínez-Finkelshtein, Program Director

Teresa E. Pérez, Secretary and SIAM Engage (SIAG/OPSF) moderator

The appointed officers are:

Howard Cohl, OP-SF NET co-editor Sarah Post, OP-SF NET co-editor

Bonita Saunders, Webmaster and SIAM Engage (SIAG/OPSF) moderator

*As of the date of the publication of OP-SF NET 31.4, the SIAG/OPSF elections have not occurred.

Topic #10 — OP - SF Net 31.4 — July 15, 2024

From: OP-SF Net Editors

Subject: Thought of the Month by Lagrange

On May 8, 1794, the chemist **Antoine-Laurent de Lavoisier** (1743-1794) was sentenced to death by the revolutionary tribunal and guillotined the same day. **Lagrange** told **Jean-Baptiste Joseph De-lambre** (1749-1822):

"It only took them a moment to make that head fall, and perhaps a hundred years will not be enough to reproduce one like it." (English translation)

Joseph-Louis Lagrange (born Giuseppe Luigi Lagrangia, 1736-1813).

NB: A year and a half later, he was exonerated by the French government.

Contributed by Claude Brezinski.