

OP-SF NET – Volume 31, Number 3 – May 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 listserv.

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: LMS Celebration of Kelvin's 200th Birthday June 28, 2024 in Glasgow
2. Announcement: An issue dedicated to Mourad Ismail's 80th Birthday on April 27, 2024
3. Report: On the HOPE in Nijmegen
4. Preprints in arXiv.org
5. Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)
6. Thought of the Month by **Charles Hermite**

Calendar of Events:

May 15–17, 2024

Journées Approximation 2024
Université de Lille, Lille, France
<https://indico.math.cnrs.fr/event/11523/>

May 27–31, 2024

Asymptotics, Randomness, Nonlinearity, and Orthogonality (ARNO 2024)
ARNO 2024 will also be the 2024 Annual Meeting of the [PIICQ network](#),
Leuven, Belgium
<https://gsilva.pages.math.cnrs.fr/arno2024/index.html>

June 3–6, 2024

International Conference on Analysis and Applications
in honor of Roderick S. C. Wong's 80th birthday,
City University of Hong Kong, Hong Kong
<https://www.cityu.edu.hk/rcms/icaa2024/index.html>

June 6–9, 2024

The Legacy of Ramanujan 2024
Celebrating the 85th birthdays of George Andrews & Bruce Berndt,
Penn State University, State College, Pennsylvania, USA
<https://sites.psu.edu/ramanujan/>

June 24–28, 2024

17th International Symposium on Orthogonal Polynomials, Special Functions and Applications
(OPSFA-17),
Universidad de Granada, Granada, Spain
<https://opsfa17.com/>

June 24–28, 2024

From Classical to Modern Analysis: In memory of Professor José Carlos Petronilho
a Satellite Conference of the [9th European Mathematical Congress](#),
Sanlúcar de Barrameda, Cadíz, Spain
<https://www.mat.uc.pt/~pgsfop/fcma/index.html>

July 8–12, 2024

Operator Theory and Approximation 2024
TU Wien, Vienna, Austria
<https://haraldworacek.github.io/OTA2024/>

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, Robert Maier and Roberto S. Costas-Santos

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 31.3 ——— May 15, 2024

From: Paul Martin (pamartin@mines.edu)

Subject: Announcement: LMS Celebration of Kelvin's 200th Birthday June 28, 2024 in Glasgow

LMS General Meeting and Celebration of Lord Kelvin's 200th Anniversary
(in partnership with BSHM and University of Glasgow)

Location: De Morgan House, London (57–58 Russell Square)
and online via Zoom, hosted by the Society

Meeting Date: Friday, 28 June, 2024

Website: <https://www.lms.ac.uk/events/meeting/lms-general-meeting-and-kelvin-200-anniversary>.

Speakers:

- Mark McCartney (Ulster University),
- Luke K. Davis (University College London),
- Rosalba Garcia-Millan (Kings College London),
- Jemma Lorenat (Pitzer College),
- Joe Goddard (UC San Diego).

LMS General Meeting and Celebration of Kelvin's 200th Anniversary

This event marks the 200th Anniversary of [Lord Kelvin](#)'s birth on 26 June 1824. The lectures are aimed at a general mathematical audience. All interested, both members and non-members of the London Mathematical Society ([LMS](#)) and the British Society for the History of Mathematics ([BSHM](#)), are most welcome to attend this event.

The event is run in partnership between the London Mathematical Society (LMS), the British Society for the History of Mathematics (BSHM) and the University of Glasgow.

Topic #2 ——— OP – SF Net 31.3 ——— May 15, 2024

From: Mahmoud Annaby (mhannaby@yahoo.com) and Erik Koelink (e.koelink@math.ru.nl)

Subject: Announcement: An issue dedicated to Mourad Ismail's 80th Birthday on April 27, 2024

Call For Papers:
Orthogonal Polynomials & Special Functions
and their Applications in Analysis and Combinatorics:
An Issue Dedicated to Mourad E. H. Ismail

Guest editors:

- Mahmoud Annaby (Cairo University, associate editor with the AJM) and
- Erik Koelink (Radboud Universiteit Nijmegen, guest editor)

Submission information: <https://link.springer.com/collections/aegggcgcah>

Important Dates:

- Open submission date: April 1st , 2024
- Closing submission date: December 31st , 2024
- Publication date: December 2025

In appreciation of Ismail's valuable contributions to Mathematics, [The Arabian Journal of Mathematics \(AJM\)](#) is releasing a special issue to honor him on this occasion. Authors are advised to follow standard instructions for AJM and submit their manuscripts online at <https://www2.cloud.editorial-manager.com/ajom/default2.aspx>.

Issue Topics: Authors are invited to submit original research papers in analysis, discrete mathematics, and their applications, particularly in:

- Orthogonal Polynomials
- Special Functions
- Differential, Difference, Integral and Functional Equations
- q -Series
- Combinatorics
- Applied Aspects of the Aforementioned Topics

Mourad Ismail: Mourad Ismail, a professor at the University of Central Florida, will turn 80 on April 27th, 2024. Professor Ismail has worked and visited a countless number of universities and institutes all over the globe and is a leading mathematician in Approximation Theory, asymptotics, combinatorics, integral transforms and operational calculus, mathematical physics, orthogonal polynomials and special functions. He is an Egyptian Canadian citizen who obtained: Ph.D. 1974 (Alberta), M.Sc. 1969 (Alberta), B.Sc. 1964 (Cairo).

Topic #3 OP – SF Net 31.3 May 15, 2024

From: Erik Koelink (e.koelink@math.ru.nl), Maarten van Pruijssen (m.vanpruijssen@math.ru.nl) and Wadim Zudilin (w.zudilin@math.ru.nl)
Subject: Report: On the HOPE in Nijmegen

Report on the HOPE in Nijmegen

Erik Koelink, Maarten van Pruijssen and Wadim Zudilin

The Hypergeometric and Orthogonal Polynomials Event (HOPE) took place in the Radboud University Nijmegen, the Netherlands, on May 1–3, 2024. This was an in-person conference that gathered 31 participants from Europe, Israel, the USA and Argentina. Our goal as of the organisers was to discuss a variety of topics on the principal theme of the event, both from the perspective of their recent development and future perspectives, under a natural constraint that they were expected to meet our personal tastes. This has been fully accomplished during the three days and we were pleased to learn, together with all the participants, current trends and standing problems in hypergeometric and orthogonal polynomials. It is certainly hard — and definitely unfair — to single out particular talks at the conference, so we limit ourselves to highlighting the topics featured: classical orthogonal polynomials, their numerous generalisations (including multiple, vector- and matrix-valued ones), connections

with representation theory and applications in analysis, mathematical physics and number theory.

A detailed programme of the HOPE, together with available slides and notes for the talks, can be found on the website <https://www.math.ru.nl/~wzudilin/HOPE-in-May.html>. There one can also observe some HOPEn problems taken from the Problem Session at the conference. Needless to add is that extended lunch breaks and evenings remain wonderful occasions for further discussions and collaborations between the participants. The atmosphere of the event was not spoiled by heavy rain which happened after the delicious HOPE dinner at a restaurant near the campus.

We have received positive feedback from the participants, many of them hope that this is not the last HOPE. Time will show but we plan to keep the spirit (and puns) of this meeting alive. Borrowing the words of a young participant (with the reference to origins of the city name), [Nijmegen](#) has been once again a “new market” to “exchange” very nice ideas. We believe that hypergeometric and orthogonal polynomials continue to actively develop, to let another HOPE thrive.

Thanks to generous support of the Dutch Research Council ([NWO](#), project OCENW.KLEIN.006), the Platform Wiskunde Nederland ([PWN](#)), the Geometry and Quantum Theory cluster ([GQT](#)) and the Institute for Mathematics, Astrophysics and Particle Physics ([IMAPP](#)), we had funding to cover local stay of most external participants and we did not charge any conference fee.

Topic #4 ——— OP – SF Net 31.3 ——— May 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 March and April 2024. This list has been separated into two categories.

OP–SF Net Subscriber E-Prints

<http://arxiv.org/abs/2403.00635>

On the asymptotic behavior for partitions separated by parity
Kathrin Bringmann, William Craig, Caner Nazaroglu

<http://arxiv.org/abs/2403.00719>

The Pólya–Tchebotarev problem with semiclassical external fields
Victor Alves, Guilherme Silva

<http://arxiv.org/abs/2403.01064>

A general q -series transformation and its applications to Rogers–Ramanujan–Slater identities
Jianan Xu, Xinrong Ma

<http://arxiv.org/abs/2403.02196>

Exponentially-improved asymptotics for q -difference equations: ${}_2\varphi_0$ and qP_1
Nalini Joshi, Adri Olde Daalhuis

<http://arxiv.org/abs/2403.03023>

On Airy solutions of P_{II} and the complex cubic ensemble of random matrices, II
Ahmad Barhoumi, Pavel Bleher, Alfredo Deaño, Maxim L. Yattselev

<http://arxiv.org/abs/2403.03445>

Evaluations and relations for finite trigonometric sums
Bruce C. Berndt, Sun Kim, Alexandru Zaharescu

<http://arxiv.org/abs/2403.03623>

An expansion formula for elliptic hypergeometric series
Gaurav Bhatnagar, Archana Kumari

<http://arxiv.org/abs/2403.03789>

Recovering orthogonality from quasi-nature of Spectral transformations
Vikash Kumar, Francisco Marcellán, A. Swaminathan

<http://arxiv.org/abs/2403.04996>

A maximal oscillatory operator on compact manifolds
Ziyao Liu, Jiecheng Chen, Dashan Fan

<http://arxiv.org/abs/2403.05169>

Bivariate Q -polynomial structures for the nonbinary Johnson scheme and the association scheme obtained from attenuated spaces
Eiichi Bannai, Hirotake Kurihara, Da Zhao, Yan Zhu

<http://arxiv.org/abs/2403.05708>

Extending the Meijer G -function
Dmitrii Karp, Alexey Kuznetsov

<http://arxiv.org/abs/2403.06395>

A Linear Algebra approach to monomiality and operational methods
Luis Verde-Star

<http://arxiv.org/abs/2403.07009>

Solving Functional Equations Dear to W. T. Tutte using the Naive (yet fully rigorous!) Guess And Check Method
Shalosh B. Ekhad, Doron Zeilberger

<http://arxiv.org/abs/2403.07160>

Essential self-adjointness of $(\Delta^2 + c|x|^{-4})|_{C_0^\infty(\mathbb{R}^n \setminus \{0\})}$
Fritz Gesztesy, Markus Hunziker

<http://arxiv.org/abs/2403.07298>

Multiple elliptic integrals and differential equations
John M. Campbell, M. Lawrence Glasser, Yajun Zhou

<http://arxiv.org/abs/2403.10485>

The inhomogeneous t -PushTASEP and Macdonald polynomials
Arvind Ayyer, James Martin, Lauren Williams

<http://arxiv.org/abs/2403.10500>

A lozenge triangulation of the plane with integers
Raghavendra N. Bhat, Cristian Cobeli, Alexandru Zaharescu

<http://arxiv.org/abs/2403.11244>

Hankel determinants of convolution powers of Catalan numbers revisited
Johann Cigler

<http://arxiv.org/abs/2403.12148>

Griffiths polynomials of Racah type

Nicolas Crampe, Luc Frappat, Julien Gaboriaud, Eric Ragoucy, Luc Vinet, Meri Zaimi

<http://arxiv.org/abs/2403.13604>

A strange identity of an MF (Mahler function)

Wadim Zudilin

<http://arxiv.org/abs/2403.15677>

Partitions in which every term but the smallest one is consecutive

Rajat Gupta, Noah Lebowitz–Lockard

<http://arxiv.org/abs/2403.15967>

Ramanujan type congruences for quotients of Klein forms

Timothy Huber, Nathaniel Mayes, Jeffery Opoku, Dongxi Ye

<http://arxiv.org/abs/2403.16264>

An extended scheme of classical special functions

Vyacheslav P. Spiridonov

<http://arxiv.org/abs/2403.16475>

Asymptotics of the confluent hypergeometric process with a varying external potential in the super-exponential region

Dan Dai, Luming Yao

<http://arxiv.org/abs/2403.16945>

New evaluations of inverse binomial series via cyclotomic multiple zeta values

John M. Campbell, M. Lawrence Glasser, Yajun Zhou

<http://arxiv.org/abs/2403.17041>

On a problem involving unit fractions

Stefan Steinerberger

<http://arxiv.org/abs/2404.00295>

A system of hypergeometric differential equations in m variables of rank p^m

Jyoichi Kaneko, Keiji Matsumoto, Katsuyoshi Ohara, Tomohide Terasoma

<http://arxiv.org/abs/2404.00711>

The Explicit Hypergeometric–Modularity Method

Michael Allen, Brian Grove, Ling Long, Fang–Ting Tu

<http://arxiv.org/abs/2404.01465>

Mahonian–Stirling statistics for partial permutations

Ming–Jian Ding, Jiang Zeng

<http://arxiv.org/abs/2404.02413>

Generalization of Spivey’s recurrence relation

Taekyun Kim, Dae San Kim

<http://arxiv.org/abs/2404.02834>

Hodge numbers of hypergeometric data

Ling Long, Yifan Yang

<http://arxiv.org/abs/2404.03026>

The Magic Number Conjecture for the $m = 2$ amplituhedron and Parke–Taylor identities
Matteo Parisi, Melissa Sherman–Bennett, Ran Tessler, Lauren Williams

<http://arxiv.org/abs/2404.03400>

q -deformed Gaussian unitary ensemble: spectral moments and genus–type expansions
Sung–Soo Byun, Peter J. Forrester, Jaeseong Oh

<http://arxiv.org/abs/2404.03851>

Remarks on the conjectures of Capparelli, Meurman, Primc and Primc
Shashank Kanade, Matthew C. Russell, Shunsuke Tsuchioka, S. Ole Warnaar

<http://arxiv.org/abs/2404.05263>

Some remarks about Hankel determinants which are related to Catalan–like numbers
Johann Cigler

<http://arxiv.org/abs/2404.06839>

On the radially deformed Fourier transform
Hendrik De Bie, Ze Yang

<http://arxiv.org/abs/2404.07566>

Neval’s condition for measures with unbounded supports
Grzegorz Świdorski

<http://arxiv.org/abs/2404.08470>

Variations of the α -Eulerian polynomials and gamma positivity
Chao Xu, Jiang Zeng

<http://arxiv.org/abs/2404.09346>

The Norton–balanced condition for Q -polynomial distance–regular graphs
Paul Terwilliger

<http://arxiv.org/abs/2404.09799>

Rational approximation of Euler’s constant using multiple orthogonal polynomials
Thomas Wolfs, Walter Van Assche

<http://arxiv.org/abs/2404.09891>

Convolution Identities of Stirling Numbers
Nadia Na Li, Wenchang Chu

<http://arxiv.org/abs/2404.11448>

An accelerated Levin–Clenshaw–Curtis method for the evaluation of highly oscillatory integrals
Arieh Iserles, Georg Maierhofer

<http://arxiv.org/abs/2404.11479>

Zeros of generalized hypergeometric polynomials via finite free convolution. Applications to multiple orthogonality
Andrei Martinez–Finkelshtein, Rafael Morales, Daniel Perales

<http://arxiv.org/abs/2404.11708>

Moments of the free Jacobi process: a matrix approach
Nizar Demni, Tarek Hamdi

<http://arxiv.org/abs/2404.12131>

Continued–fraction characterization of Stieltjes moment sequences with support in ξ, ∞)
Alan D. Sokal, James Walrad

<http://arxiv.org/abs/2404.13709>

Absolute moments of the variance–gamma distribution
Robert E. Gaunt

<http://arxiv.org/abs/2404.13958>

Classical multiple orthogonal polynomials for arbitrary number of weights and their explicit representation
Amílcar Branquinho, Juan E. F. Díaz, Ana Foulquié–Moreno, Manuel Mañas

<http://arxiv.org/abs/2404.13965>

Banded totally positive matrices and normality for mixed multiple orthogonal polynomials
Amílcar Branquinho, Ana Foulquié–Moreno, Manuel Mañas

<http://arxiv.org/abs/2404.14391>

Strong Asymptotics of Multiple Orthogonal Polynomials for Angelesco Systems. Part I: Non–Marginal Directions
A. I. Aptekarev, S. A. Denisov, M. L. Yattselev

<http://arxiv.org/abs/2404.15063>

On cyclotomic matrices involving Gauss sums over finite fields
Hai–Liang Wu, Jie Li, Li–Yuan Wang, Chi Hoi Yip

<http://arxiv.org/abs/2404.16539>

Confluent functions, Laguerre polynomials and their (generalized) bilinear integrals
Jan Dereziński, Christian Gaß, Joonas Mikael Vättö

<http://arxiv.org/abs/2404.17678>

Splitting Hypergeometric Functions over Roots of Unity
Dermot McCarthy, Mohit Tripathi

<http://arxiv.org/abs/2404.18666>

Szegő Recurrence for Multiple Orthogonal Polynomials on the Unit Circle
Marcus Vaktnäs, Rostyslav Kozhan

Other Relevant OP–SF E–Prints

<http://arxiv.org/abs/2403.00216>

A Mathematical Model for Two Solutes Transport in a Poroelastic Material and Its Applications
Roman Cherniha, Joanna Stachowska–Pietka, Jacek Waniewski

<http://arxiv.org/abs/2403.01247>

On q –series and the moment problem associated to local factors
Alain Connes, Caterina Consani, Henri Moscovici

<http://arxiv.org/abs/2403.01474>

Companion matrix, Vandermonde matrix, Jordan form, Interpolating Polynomials, and Linear Transformations

Chi-Kwong Li, Jephian C.-H. Lin

<http://arxiv.org/abs/2403.02007>

An asymptotic expansion of eigenpolynomials for a class of linear differential operators

Jorge A. Borrego-Morell

<http://arxiv.org/abs/2403.02237>

Analytic continuations and numerical evaluation of the Appell F_1 , F_3 , Lauricella $F_D^{(3)}$ and Lauricella-Saran $F_S^{(3)}$ and their Application to Feynman Integrals

Souvik Bera, Tanay Pathak

<http://arxiv.org/abs/2403.02490>

Binomial Coefficients and Littlewood-Richardson Coefficients for Interpolation Polynomials

Hong Chen, Siddhartha Sahi

<http://arxiv.org/abs/2403.02813>

On the Mathieu Conjecture for $Sp(N)$ and G_2

Kevin Zwart

<http://arxiv.org/abs/2403.02949>

Radial amplitude equations for fully localised planar patterns

Dan J. Hill, David J. B. Lloyd

<http://arxiv.org/abs/2403.03076>

Fast and robust method for screened Poisson lattice Green's function using asymptotic expansion and Fast Fourier Transform

Wei Hou, Tim Colonius

<http://arxiv.org/abs/2403.03345>

Ramanujan's congruence primes

Ellise Parnoff, A. Raghuram

<http://arxiv.org/abs/2403.03439>

Line defect half-indices of $SU(N)$ Chern-Simons theories

Tadashi Okazaki, Douglas J. Smith

<http://arxiv.org/abs/2403.03665>

Robust radial basis function interpolation based on geodesic distance for the numerical coupling of multiphysics problems

Michele Bucelli, Francesco Regazzoni, Luca Dede', Alfio Quarteroni

<http://arxiv.org/abs/2403.03678>

Application of Deep Learning Reduced-Order Modeling for Single-Phase Flow in Faulted Porous Media

Enrico Ballini, Luca Formaggia, Alessio Fumagalli, Anna Scotti, Paolo Zunino

<http://arxiv.org/abs/2403.03749>

Coulomb Green's function and an addition formula for the Whittaker functions

Pavel Šťovíček

<http://arxiv.org/abs/2403.03873>

The algebra $\mathcal{D}(W)$ via strong Darboux transformations
Ignacio Bono Parisi, Inés Pacharoni

<http://arxiv.org/abs/2403.03895>

The Lanczos Tau Framework for Time–Delay Systems: Padé Approximation and Collocation Revisited
Evert Provoost, Wim Michiels

<http://arxiv.org/abs/2403.03912>

Digamma function and general Fischer series in the theory of Kempner sums
Jean–François Burnol

<http://arxiv.org/abs/2403.04555>

Wilf–Zeilberger seeds: q -analogues
Kam Cheong Au

<http://arxiv.org/abs/2403.04862>

Chebyshev polynomials, their remarkable properties and connection with Catalan numbers
Andrey Ryabichev, Konstantin Shcherbakov

<http://arxiv.org/abs/2403.04973>

Hypergeometric solutions to Schwarzian equations
Khalil Besrou, Abdellah Sebbar

<http://arxiv.org/abs/2403.06105>

Connection Laplacian on discrete tori with converging property
Yong Lin, Shi Wan, Haohang Zhang

<http://arxiv.org/abs/2403.06156>

Nonlinear Schrödinger equation in terms of elliptic and hyperelliptic σ functions
Shigeki Matsutani

<http://arxiv.org/abs/2403.06722>

Asymptotics of the finite–temperature sine kernel determinant
Shuai–Xia Xu

<http://arxiv.org/abs/2403.07123>

On certain harmonic zeta functions
Mümün Can, Levent Kargın, Mehmet Cenkci, Ayhan Dil

<http://arxiv.org/abs/2403.07168>

Elliptic analogue of Vershik–Kerov limit shape
Andrey Grekov, Nikita Nekrasov

<http://arxiv.org/abs/2403.07291>

An extension of the Chudnovsky algorithm
John M. Campbell

<http://arxiv.org/abs/2403.07466>

Norms in sinogram space and stability estimates for the Radon transform
Stefan Kindermann, Simon Hubmer

<http://arxiv.org/abs/2403.07628>

Asymptotic Expansions of the Limit Laws of Gaussian and Laguerre (Wishart) Ensembles at the Soft Edge
Folkmar Bornemann

<http://arxiv.org/abs/2403.08249>

Schatten–Lorentz characterization of Riesz transform commutator associated with Bessel operators
Zhijie Fan, Michael Lacey, Ji Li, Xiao Xiong

<http://arxiv.org/abs/2403.09643>

An Algebraic Extension of the General Leibniz Product rule for Fractional Indices and Applications
Ryan Willis

<http://arxiv.org/abs/2403.09645>

Some Generalized Inequalities Involving Extended Beta and Gamma Functions for Several Variables
S. Mubeen, I. Aslam, Ghazi S. Khammsh, Ayman Shehata

<http://arxiv.org/abs/2403.09659>

A New Extended Range of Modified Gamma and Beta Functions
S. Mubeen, I. Aslam, Ghazi S. Khammsh, Ayman Shehata

<http://arxiv.org/abs/2403.09694>

Unidirectional pulses: relatively undistorted quasi–spherical waves, Fourier–Bessel integrals, and plane–waves decompositions
Alexandr B. Plachenov, Aleksei. P. Kiselev

<http://arxiv.org/abs/2403.09695>

Convexity properties related to Gauss hypergeometric function
Mohamed Bouali

<http://arxiv.org/abs/2403.09711>

Two–dimensional generalized gamma function and its applications
Artem M. Ponomarenko

<http://arxiv.org/abs/2403.10503>

On the frame property of Hermite functions and analytic extensions of their frame sets
Markus Faulhuber, Irina Shafkulovska, Ilya Zlotnikov

<http://arxiv.org/abs/2403.10718>

Revisiting the time–integrated polarizations of gamma–ray burst prompt phase
Li–Qiang Sui, Mi–Xiang Lan

<http://arxiv.org/abs/2403.10813>

Commutant of sum of two quasihomogeneous Toeplitz operators
Aissa Bouhali, Issam Louhichi

<http://arxiv.org/abs/2403.11349>

Discrete Painlevé equations and pencils of quadrics in \mathbb{P}^3
Jaume Alonso, Yuri B. Suris, Kangning Wei

<http://arxiv.org/abs/2403.12516>

Relations between Chebyshev, Fibonacci and Lucas polynomials via trigonometric sums
Lejla Smajlović, Zenan Šabanac, Lamija Šćeta

<http://arxiv.org/abs/2403.13157>

A note on zero density results implying large value estimates for Dirichlet polynomials
Kaisa Matomäki, Joni Teräväinen

<http://arxiv.org/abs/2403.13932>

Generating all time-changes preserving dynamical zeta functions
Sawian Jaidee, Jakub Byszewski, Thomas Ward

<http://arxiv.org/abs/2403.14311>

On Intermediate Exceptional Series
Kimyeong Lee, Kaiwen Sun, Haowu Wang

<http://arxiv.org/abs/2403.14604>

An explicit parity theorem for multiple zeta values via multitangent functions
Minoru Hirose

<http://arxiv.org/abs/2403.14816>

Non-holomorphic modular forms from zeta generators
Daniele Dorigoni, Mehregan Doroudiani, Joshua Drewitt, Martijn Hidding, Axel Kleinschmidt, Oliver Schlotterer, Leila Schneps, Bram Verbeek

<http://arxiv.org/abs/2403.14936>

Some evaluations of interpolated multiple zeta values and interpolated multiple t -values
Zhonghua Li, Zhenlu Wang

<http://arxiv.org/abs/2403.14942>

Asymptotics of the Humbert function Ψ_1 for two large arguments
Peng-Cheng Hang, Min-Jie Luo

<http://arxiv.org/abs/2403.15086>

On alternating sum formulas for the Arakawa–Kaneko multiple zeta values
Yuta Nishimura

<http://arxiv.org/abs/2403.15138>

On prescribed characteristic polynomials
Peter Danchev, Esther García, Miguel Gómez Lozano

<http://arxiv.org/abs/2403.15741>

On the series expansion of the secondary zeta function
Artur Kawalec

<http://arxiv.org/abs/2403.16076>

Arithmetic of critical p -adic L -functions
Denis Benois, Kâzım Büyükboduk

<http://arxiv.org/abs/2403.16219>

Speed of convergence in the Central Limit Theorem for the determinantal point process with the Bessel kernel
Sergei M. Gorbunov

<http://arxiv.org/abs/2403.16243>

qt RSK*: A probabilistic dual RSK correspondence for Macdonald polynomials

Gabriel Frieden, Florian Schreier–Aigner

<http://arxiv.org/abs/2403.16691>

Asymptotic and non-asymptotic results for a binary additive problem involving Piatetski–Shapiro numbers

Yuuya Yoshida

<http://arxiv.org/abs/2403.16939>

p -Adic hypergeometric functions and certain weight three newforms

Sulakashna, Rupam Barman

<http://arxiv.org/abs/2403.17077>

Orbifold theta functions and mid-age invariants

Fenglong You

<http://arxiv.org/abs/2403.17170>

Approximations of Functions With Essential Singularities with Applications to Painlevé’s First Transcendent

Nicholas Castillo

<http://arxiv.org/abs/2403.17522>

Jacob’s ladders, Hardy–Littlewood integral (1918) and new asymptotic functional equations for Euler’s Gamma function together with the tenth equivalent of the Fermat–Wiles theorem

Jan Moser

<http://arxiv.org/abs/2403.17700>

Dynamical Zeta functions for differentiable parabolic maps of the interval

Claudio Bonanno, Roberto Castorrini

<http://arxiv.org/abs/2403.17803>

On Littlewood’s estimate for the modulus of the zeta function on the critical line

Emanuel Carneiro, Micah B. Milinovich

<http://arxiv.org/abs/2403.17997>

La relation entre $\zeta(4n - 1)$, $\zeta(2p)$ et $\zeta(4n - 1 - 2p)$

Mundankulu Kabongo

<http://arxiv.org/abs/2403.18037>

A remark on the distortion of twisted sums

Jesús Suárez

<http://arxiv.org/abs/2403.18663>

On the concentration of the Fourier coefficients for products of Laplace–Beltrami eigenfunctions on real-analytic manifolds

Philippe Charron, François Pagano

<http://arxiv.org/abs/2403.18669>

Orthogonal Polynomials with a Singularly Perturbed Airy Weight

Chao Min, Yuan Cheng

<http://arxiv.org/abs/2403.19045>

Sister Celine's polynomials in the quantum theory of angular momentum
Jean-Christophe Pain

<http://arxiv.org/abs/2403.19086>

Type problem, the first eigenvalue and Hardy inequalities
Gilles Carron, Bo-Yong Chen, Yuanpu Xiong

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Complex generalized Gauss-Radau quadrature rules for Hankel transforms of integer order
Haiyong Wang, Menghan Wu

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The Green's function of polyharmonic operators with diverging coefficients: Construction and sharp asymptotics
Lorenzo Carletti

<http://arxiv.org/abs/2403.19619>

Existence of a global fundamental solution for Hörmander operators
Mattia Galeotti

<http://arxiv.org/abs/2403.19664>

${}_3F_4$ hypergeometric functions as a sum of a product of ${}_2F_3$ functions
Jack C. Straton

<http://arxiv.org/abs/2403.20140>

A well-motivated proof that pi is irrational
Timothy Y. Chow

<http://arxiv.org/abs/2403.20217>

Study on a Quantization Condition and the Solvability of Schrödinger-type Equations
Yuta Nasuda

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Fractional Calculus Operator Emerging from the 2D Biorthogonal Hermite Konhauser Polynomials
Mehmet Ali Ozarslan, İlkay Onbasi Elidemir

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On the Small Jumps of Lévy Processes and the Multivariate Dickman Distribution
Michael Grabchak, Xingnan Zhang

<http://arxiv.org/abs/2404.00281>

Non-intersecting path explanation for block Pfaffians and applications into skew-orthogonal polynomials
Zong-Jun Yao, Shi-Hao Li

<http://arxiv.org/abs/2404.00414>

Chebyshev and The Fast Fourier Transform Methods for Signal Interpolation
Ishmael N. Amartey

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Computing some Principal Value integrals without Residues and Applications on Hilbert Transform and Fourier Transform

Jorge Pedraza Arpasi

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Szegő Limit Theorem for Truncated Toeplitz Operators

Nazar Miheisi, Ryan O'Loughlin

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Two-dimensional moment problem and Schur algorithm

Ivan Kovalyov, Stefan Kunis

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Curves in the Fourier zeros of polytopal regions and the Pompeiu problem

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A quantum Pascal pyramid and an extended de Moivre–Laplace theorem

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Macdonald characters from a new formula for Macdonald polynomials

Houcine Ben Dali, Michele D'Adderio

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Growth diagram proofs for the Littlewood identities

Florian Schreier–Aigner

<http://arxiv.org/abs/2404.04658>

Characterization of the weighted Sobolev space $H_{\beta}^s(\Omega)$ in \mathbb{R}^2 in terms of the decay rate of Fourier–Jacobi coefficients

V. J. Ervin

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Numerical schemes for radial Dunkl processes

Hoang–Long Ngo, Dai Taguchi

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A user's guide to Beilinson–Kato's zeta elements

Chan–Ho Kim

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Fractional type operators on the Heisenberg group

Pablo Rocha

<http://arxiv.org/abs/2404.05510>

Hardy and Rellich identities and inequalities for Grushin operators via spherical vector fields and Bessel pairs

Debdip Ganguly, K. Jotsaroop, Prasun Roychowdhury

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A note on trigonometric polynomials for lower bounds of $\zeta(s)$

Nicol Leong, Michael J. Mossinghoff

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Modulus representation of the Riemann ξ function

Wei Sun

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Higher Order Lipschitz Sandwich Theorems

Terry Lyons, Andrew D. McLeod

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Arakelov–Green’s functions for dynamical systems on projective varieties

Nicole R. Looper

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Algebraic identities among q -analogue of Euler double zeta values

Tapas Chatterjee, Sonam Garg

<http://arxiv.org/abs/2404.07690>

Transcendental nature of p -adic digamma values

Tapas Chatterjee, Sonam Garg

<http://arxiv.org/abs/2404.08025>

On arithmetic nature of q -analogue of the generalized Stieltjes constants

Tapas Chatterjee, Sonam Garg

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Algebraic formulas and Geometric derivation of Source Identities

Kohei Motegi, Ryo Ohkawa

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Large–Parameter Asymptotics of Generalized Hasting–McLeod Functions

Kurt Schmidt, Robert Buckingham

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Optimal Transport for Mixtures of Radial Functions

Keyu Chen, Yunxin Zhang

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Generalized Hydrodynamics for the Volterra lattice: Ballistic and nonballistic behavior of correlation functions

Guido Mazzuca

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Twisted correlations of the divisor function via discrete averages of $SL_2(\mathbb{R})$ Poincaré series

Lasse Grimmelt, Jori Merikoski

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A modified Polak–Ribiere–Polyak type conjugate gradient method with two stepsize strategies for vector optimization

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Hybrid Statistics of a Random Model of Zeta over Intervals of Varying Length
Christine Chang

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Central and noncentral moments of the multivariate hypergeometric distribution
Frédéric Ouimet

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Linear independence of q -analogue of the generalized Stieltjes constants over number fields
Tapas Chatterjee, Sonam Garg

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Multivariate confluent Vandermonde with G -Arnoldi and applications
Lei-Hong Zhang, Ya-Nan Zhang, Linyi Yang, Yifu Wu

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Asymptotics of Bergman polynomials for domains with reflection-invariant corners
Erwin Miña-Díaz, Aron Wennman

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Implicit EXP-RBF techniques for modeling unsaturated flow through soils with water uptake by plant roots
Mohamed Boujoudar, Abdelaziz Beljadid, Ahmed Taik

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Fractional Integral Estimates of Hermite-Hadamard type in Global Nonpositive Curvature Spaces
Peter Olamide Olanipekun

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A Weitzenböck formula on Sasakian holomorphic bundles
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Fractional derivatives of local times for some Gaussian processes
Minhao Hong, Qian Yu

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Computing with Hypergeometric-Type Terms
Bertrand Teguia Tabuguia

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Communicating skyrmions as the main mechanism underlying skyrmionium (meta)stability in quasi-two-dimensional chiral magnets
Kaito Nakamura, Andrey O. Leonov

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All meromorphic solutions of Fermat-type functional equations
Feng Lü

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Determining the order of time and spatial fractional derivatives

Ravshan Ashurov, Ilyoskhujja Sulaymonov

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Computation of the solution for the 2D acoustic pulse propagation

Pavel Bakhvalov

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Polarized Adding Method of Discrete Ordinate Approximation for Ultraviolet–Visible and Near–Infrared Radiative Transfer

Kun Wu, Feng Zhang, Wenwen Li, Fengzi Bao, Yi–ning Shi

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Homology operations for gravity algebras

Tommaso Rossi

<http://arxiv.org/abs/2404.10805>

Miscellaneous summation, integration, and transformation formulas

Martin Nicholson

<http://arxiv.org/abs/2404.11173>

A simple derivation of the integrals of products of Legendre polynomials with logarithmic weight

Sebastian Schmutzhard–Höfler

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Two–Dimensional Coulomb Gas on an Elliptic Annulus

Taro Nagao

<http://arxiv.org/abs/2404.11878>

Transition threshold for the 2–D Couette flow in whole space via Green’s function

Gaofeng Wang, Weike Wang

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On the spectrum of a differential operator on a Hilbert–Pólya space

Xian–Jin Li

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Finite–zone PT–potentials

I. A. Taimanov

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LRBF meshless methods for predicting soil moisture distribution in root zone

Mohamed Boujoudar, Abdelaziz Beljadid, Ahmed Taik

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Quantitative upper bounds related to an isogeny criterion for elliptic curves

Alina Carmen Cojocaru, Auden Hinz, Tian Wang

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Anti–concentration applied to roots of randomized derivatives of polynomials

André Galligo, Joseph Najnudel, Truong Vu

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Meta Distribution of Passive Electromagnetic Field Exposure in Cellular Networks

Quentin Gontier, Charles Wiame, François Horlin, Christo Tsigros, Claude Oestges, Philippe De Doncker

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Hypergeometric sheaves with tannakian monodromy group G_2

Beat Zurbuchen

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A note on the Fourier magnitude data and Sobolev embeddings

Jesse Railo

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Discrete non-commutative hungry Toda lattice and its application in matrix computation

Zheng Wang, Shi-Hao Li, Kang-Ya Lu, Jian-Qing Sun

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Full Galois groups of polynomials with slowly growing coefficients

Lior Bary-Soroker, Noam Goldgraber

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Sup-norm bounds for Jacobi cusp forms

Anilatmaja Aryasomayajula, Jürg Kramer, Anna-Maria von Pippich

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Highest-weight vectors and three-point functions in GKO coset decomposition

Mikhail Bershtein, Boris Feigin, Aleksandr Trufanov

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The zeta-determinant of the Dirichlet-to-Neumann operator of the Steklov Problem on forms

Klaus Kirsten, Yoonweon Lee

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Some integral inequalities via Caputo and Liouville fractional integral operators for m -convex functions

M. Emin Özdemir

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Sharp quasi-invariance threshold for the cubic Szegő equation

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Quantifying multipartite quantum states by $(k + 1)$ -partite entanglement measures

Hui Li, Ting Gao, Fengli Yan

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Univalent approximation by Fourier series of step functions

Allen Weitsman

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An algebraic-geometric construction of “lump” solutions of the KP1 equation

John B. Little

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A discretization of the iterated integral expression of the multiple polylogarithm
Minoru Hirose, Toshiki Matsusaka, Shin-ichiro Seki

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Supersymmetric Analysis of Spinning Cosmic String Spacetime Within External fields with Aharonov-Bohm interaction
O. Yesiltas, B. B. Oner

<http://arxiv.org/abs/2404.15494>

On the topology of $\mathcal{M}_{0,n+1}/\Sigma_n$ and $\overline{\mathcal{M}}_{0,n+1}/\Sigma_n$
Tommaso Rossi

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Isomonodromy and Painlevé type equations, Case Studies
Marius van der Put, Jaap Top

<http://arxiv.org/abs/2404.16199>

Creative telescoping and generating functions of (variants of) multiple zeta values
Kam Cheong Au, Steven Charlton

<http://arxiv.org/abs/2404.16258>

Central charges in local mirror symmetry via hypergeometric duality
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Omega Theorems for Logarithmic Derivatives of Zeta and L -functions Near the 1-line
Zhonghua Li, Shengbo Zhao

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Fourier Coefficients and Algebraic Cusp Forms on $U(2, n)$
Anton Hilado, Finn McGlade, Pan Yan

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Monogenic Cyclic Quartic Trinomials
Lenny Jones

<http://arxiv.org/abs/2404.17921>

Monogenic Even Octic Polynomials and Their Galois Groups
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An open-source solver for finding global solutions to constrained derivative-free optimization problems
Gannavarapu Chandramouli, Vishnu Narayanan

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Non-abelian symmetric critical gravitating vortices on a sphere
Vamsi Pritham Pingali

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Casimir force within Ising chain with competing interactions
Daniel Dantchev, Nicholay Tonchev, Joseph Rudnick

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A Nygaard Approach to Values of Zeta Functions of Schemes over Finite Fields
Logan Hyslop

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Self-Similar Collapse in Painlevé–Gullstrand Coordinates
Soumya Chakrabarti, Chiranjeeb Singha

<http://arxiv.org/abs/2404.18432>

Structure-preserving particle methods for the Landau collision operator using the metriplectic framework
Sandra Jeyakumar, Michael Kraus, Matthew J. Hole, David Pfefferlé

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Harmonic locus and Calogero–Moser spaces
Giovanni Felder, Alexander P. Veselov

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Exploring Chebyshev Polynomial Approximations: Error Estimates for Functions of Bounded Variation
S. Akansha

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Tensor cumulants for statistical inference on invariant distributions
Dmitriy Kunisky, Cristopher Moore, Alexander S. Wein

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Non-parametric estimation for the stochastic wave equation
Eric Ziebell

<http://arxiv.org/abs/2404.19053>

Fast Adaptive Fourier Integration for Spectral Densities of Gaussian Processes
Paul G. Beckman, Christopher J. Geoga

<http://arxiv.org/abs/2404.19698>

Structural properties of Krylov subspaces and applications to unbounded self-adjoint operators
Noè Angelo Caruso

Topic #5 ——— OP – SF Net 31.3 ——— May 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 31.4 should be sent by July 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 31.3, the SIAG/OPSF elections have not occurred.

Topic #6 OP – SF Net 31.3 May 15, 2024

From: OP-SF Net Editors

Subject: Thought of the Month by **Charles Hermite**

In French:

“Je ne puis sortir du domaine elliptique; là où la chèvre est attachée, dit le proverbe, il faut qu’elle broute.”

English translation:

“I cannot leave the elliptical domain; where the goat is tied, says the proverb, it has to graze.”

Charles Hermite (1822–1901), Letter to **Thomas Joannes Stieltjes**, 22 October 1892.

Contributed by **Claude Brezinski**.