

# OP-SF NET – Volume 26, Number 1 – January 15, 2019

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

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

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**Calendar of Events:**

**January 16–19, 2019**

2019 Joint Mathematics Meetings, American Mathematical Society,  
Baltimore Convention Center, Baltimore, Maryland, USA

[https://jointmathematicsmeetings.org/meetings/national/jmm2019/2217\\_program.html](https://jointmathematicsmeetings.org/meetings/national/jmm2019/2217_program.html)

*AMS Special Session on Orthogonal Polynomials, Quantum Probability,  
Harmonic and Stochastic Analysis,*

Organized by Nobuhiro Asal, Rodica Costin, Aurel L. Star and Hiroaki Yoshida

*AMS Special Session on Continued Fractions,*

Organized by Geremías Polanco Encarnación, James McLaughlin, Barry Smith and Nancy J. Wyshinski

**March 28–29 2019**

Fifth Orthonet Meeting

(V Congreso de la Red de Polinomios Ortogonales y Teoría de Aproximación)

Universidad Pública de Navarra, Pamplona, Spain

<http://www.unavarra.es/congreso-orthonet>

**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 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 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>

Topic #1      ——— OP – SF Net 26.1      ——— January 15, 2019

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

Subject: Message from the Chair (January 2019)

I'd like to use this opportunity to wish everyone the best for 2019. It is going to be an interesting year since we will have the next OPSFA meeting (OPSFA–15) in Austria from July 22 to July 26. During this meeting the next Gábor Szegő prize will be awarded, but for now we will keep the name secret and reveal the winner in the next newsletter.

Of course, there will be many other interesting meetings and conferences, of which we keep track in our calendar of events. Please do not hesitate to send an announcement of a meeting, workshop, symposium, conference or school, so that we can add it to the calendar. We also very much like to read reports of a meeting by some of the participants, so that we can share the experience of the event and our appreciation for the organizers.

We have now 164 members in the OPSFA activity group. This is somewhat lower than what we had the past few years, but perhaps some people still need to renew their membership. Unfortunately SIAM has increased the fee for joining an activity group to \$15, but I still recommend to join SIAG/OPSF so that we remain visible as an active research field in mathematics.

As far as I know there are no plans for a summer school in 2019, but Erik Koelink and I are planning a summer school in August 2020 at Radboud University in Nijmegen, the Netherlands. We feel that there is no need to have a summer school every year but that it would be nice to have a school in the years between an OPSFA meeting.

We hereby also open the call for the organization of OPSFA-16 in 2021. Anyone who is interested in organizing the symposium Orthogonal Polynomials, Special Functions and Applications in 2021 can contact the Steering Committee of the OPSFA meetings. Navigate to the homepage of the OPSFA meetings <https://wis.kuleuven.be/events/archive/OPSFA> and follow the link for the call for OPSFA-16. The steering committee consists of the SIAG/OPSF chair and three organizers of the past five OPSFA meetings. They are not involved in the organization of the OPSFA meeting but they coordinate the international OPSFA meetings and the summer schools so that there is no overlap of competing initiatives.

This year will also be my last year as chair of this activity group. Later this year there will be an election for the officers of the activity group and since I am already serving my second term as chair I won't be eligible anymore. I am sure others can take over the task and I will set up a nominating committee before March. Nominees for the officers of the activity group will be identified by the end of June so that we can present them at the OPSFA meeting during the 2019 SIAG/OPSF business meeting. The election starts September 1 and ends November 30, so that the new team of officers can start their term on January 1, 2020.

I'm looking forward to see many of you this year.  
Walter Van Assche, chair

## Topic #2 ——— OP – SF Net 26.1 ——— January 15, 2019

From: Tom Koorwinder ([T.H.Koorwinder@uva.nl](mailto:T.H.Koorwinder@uva.nl))  
Subject: Announcement: NIST DLMF unavailable because of US government shutdown

The DLMF <http://dlmf.nist.gov> (Digital Library of Mathematical Functions) website located at the National Institute of Standards and Technology (NIST) is temporarily unavailable due to the fact that the United States federal government is currently partially shut down. Instead, one may use the hardcopy NIST Handbook of Mathematical Functions, published by Cambridge University Press in 2010. However, all updates and errata which are published in the digital version are missing there.

## Topic #3 ——— OP – SF Net 26.1 ——— January 15, 2019

From: Lothar Reichel ([reichel@math.kent.edu](mailto:reichel@math.kent.edu))  
Subject: Announcement: ETNA 25 Conference on Sardinia, Italy, May 27–29

ETNA 25 Conference on Sardinia, Italy, May 27–29

We cordially invite you to attend the conference “Recent Advances in Scientific Computation”, which is planned on the occasion of the 25<sup>th</sup> anniversary of the Electronic Transactions on Numerical Analysis (ETNA).

The conference will take place on May 27–29, 2019, at Santa Margherita di Pula outside Cagliari, Sardinia, Italy. A focus of the conference will be new developments in large-scale

computation. Many areas will be covered, including image restoration, Krylov subspace iterative methods, preconditioning, matrix functions, the solution of partial differential equations, network analysis, and the solution of ill-posed problems. The conference also will celebrate Fiorella Sgallari's 65<sup>th</sup> birthday. Further information about the conference, including plenary speakers, special sessions, and how to register, can be found at the website: <http://bugs.unica.it/ETNA25/>

On behalf of the organizing committee

Ronny Ramlau, Lothar Reichel, and Giuseppe Rodriguez

## Topic #4 ——— OP – SF Net 26.1 ——— January 15, 2019

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

Subject: Announcement: SIAM News Report: *Progress by Accident* by Walter Gautschi

In The December 2018 issue of [SIAM news \(Volume 51 / Issue 10\)](#) there is an interesting contribution by Walter Gautschi, Professor Emeritus of Computer Science and Mathematics at Purdue University and a leading mathematician in the areas of approximation theory, orthogonal polynomials, special functions, and numerical analysis. As was reported earlier in our SIAG/OPSF newsletter, Walter Gautschi celebrated his 90<sup>th</sup> birthday in December 2017.

The article is titled “Progress by Accident: Some Reflections on My Career”. An extended version is available online at:

<https://sinews.siam.org/Details-Page/progress-by-accident-some-reflections-on-my-career>.

## Topic #5 ——— OP – SF Net 26.1 ——— January 15, 2019

From: Xiang-Sheng Wang ([xswang@louisiana.edu](mailto:xswang@louisiana.edu))

Subject: Workshop Report: 2018 CMS Vancouver Winter Meeting by Xiang-Sheng Wang

The Canadian Mathematical Society Winter Meeting was held during December 7–10, 2018, in the beautiful ocean city of Vancouver, Canada. Dr. Chunhua Ou (Memorial University of Newfoundland, Canada) and Dr. Xiang-Sheng Wang (University of Louisiana at Lafayette, Lafayette, Louisiana, USA) co-organized a special session on asymptotic analysis and applications. The speakers from Canada, China, Korea and the United States presented research works on asymptotic analysis in orthogonal polynomials, special functions, differential equations, difference equations, and random matrices. The full list of speakers and talk titles is given below:

- Roderick Wong (City University of Hong Kong, Hong Kong), Asymptotics of the associated Pollaczek polynomials
- Michael Ward (University of British Columbia, Vancouver, Canada), The Stability of Hotspot Patterns for a Continuum Model of Urban Crime and the Effect of Police Intervention
- Dan Dai (City University of Hong Kong, Hong Kong), Gap probability at the hard edge for random matrix ensembles with pole singularities in the potential
- Shuai-Xia Xu (Sun Yat-sen University, Guangzhou, China), Gap probability in critical unitary random matrix ensembles and the coupled Painlevé II system

- Mourad Ismail (University of Central Florida, Orlando, Florida, USA), The  $q$ -Normal Distribution
- Howard Cohl (National Institute of Standards and Technology, Mission Viejo, California, USA), Asymptotics of Fundamental Solutions for Helmholtz operators on Spaces of Constant Curvature
- Ruiming Zhang (Northwest A&F University, Xianyang, China), Asymptotics of Theta Functions
- Junho Choi (Ulsan National Institute of Science and Technology, Ulsan, South Korea), On Boundary Layers for the Burgers Equations in a Bounded Domain
- Xiang-Sheng Wang (University of Louisiana at Lafayette, Lafayette, Louisiana, USA), Asymptotic analysis of difference equations

The CMS winter meeting was surprisingly small as compared with the annual meeting of AMS (Joint Mathematics Meetings). However, it was great to have an OPSFA activity in Canada. There were many interesting discussions inspired by the presentations in the special session.

In the last day of the meeting, the OPSFA community went out to explore the city of Vancouver. They had an unusual experience – as commented by Howard Cohl – at an interesting Japanese restaurant with a bilingual menu which did not have an appropriate and informative translation in English. Thanks to innocent staff and an illegible menu, they had the chance to try various delicious foods, whose names remained a mystery though.

Some of the speakers had already planned to meet again at the 15<sup>th</sup> International Symposium on OPSFA in Austria in July 2019.

Topic #6 ——— OP – SF Net 26.1 ——— January 15, 2019

From: Michael Schlosser ([michael.schlosser@univie.ac.at](mailto:michael.schlosser@univie.ac.at)), Ole Warnaar ([o.warnaar@maths.uq.edu.au](mailto:o.warnaar@maths.uq.edu.au)), Vyacheslav P. Spiridonov ([spivp@yahoo.com](mailto:spivp@yahoo.com))  
 Subject: Special issue on Elliptic Hypergeometric Functions in *SIGMA*: Completed

We are pleased to announce that the [SIGMA](#) special issue on [Elliptic Hypergeometric Functions and Their Applications](#) has been successfully completed and is freely available online at: <http://www.emis.de/journals/SIGMA/EHF2017.html>.

The issue contains 18 original research papers with a total of 517 pages.

The editors of the issue would like to thank all authors for their interesting contributions and all the referees for generously assisting us with their constructive reviews. We would also like to extend a special thanks to the editorial team of *SIGMA*.

Sincerely yours,  
 The guest editors of the special issue,  
 Michael Schlosser, Vyacheslav P. Spiridonov and Ole Warnaar

Topic #7 ——— OP – SF Net 26.1 ——— January 15, 2019

From: Howard S. Cohl ([howard.cohl@nist.gov](mailto:howard.cohl@nist.gov))  
 Subject: Special issue on Special Functions and Orthogonal Polynomials in *Symmetry*

The journal [Symmetry](#) (impact factor 1.256) will publish a special issue entitled: *Symmetry in Special Functions and Orthogonal Polynomials*.

The guest editors for this special issue are [Howard S. Cohl](#), [Charles F. Dunkl](#), [Roberto S. Costas-Santos](#), [Hans Volkmer](#), and [Loyal Durand](#).

Special functions, one of the oldest branches of real and complex analysis, have been exploited by Isaac Newton, Gottfried Leibniz, Leonhard Euler, Carl Friedrich Gauss, Bernhard Riemann, and among many other great mathematicians, physicists, astronomers, and scientists. In the recent past, using many diverse methods, new special functions and orthogonal polynomials have been introduced and explored, new organizational structures have been discovered, and new results have been obtained for centuries-old special functions. In this special issue, we invite and welcome review, expository, and original research articles dealing with recent advances on the topics of special functions and orthogonal polynomials of one, as well as several, variables.

Scope: Special functions; Orthogonal polynomials;  $q$ -series and  $q$ -calculus; Generalized, basic, elliptic, and Kaneko-Macdonald hypergeometric series; Addition theorems and eigenfunction expansions; Definite and indefinite integrals of special functions; Global analysis on Riemannian and pseudo-Riemannian manifolds; and Applications of special functions and orthogonal polynomials.

The special issue title is: *Symmetry in Special Functions and Orthogonal Polynomials*.

The deadline for manuscript submissions is: 31 December 2019.

The webpage for the special issue is:

[https://www.mdpi.com/journal/symmetry/special\\_issues/Symmetry\\_Special\\_Functions\\_Orthogonal\\_Polynomials\\_Applications](https://www.mdpi.com/journal/symmetry/special_issues/Symmetry_Special_Functions_Orthogonal_Polynomials_Applications).

To submit a manuscript to this special issue, go to this [link](#).

Topic #8 ——— OP – SF Net 26.1 ——— January 15, 2019

From: OP-SF Net Editors

Subject: Preprints in arXiv.org

The following preprints related to the fields of orthogonal polynomials and special functions were posted or cross-listed to one of the subcategories of arXiv.org during November and December 2018. This list has been separated into two categories.

### OP-SF Net Subscriber E-Prints

<http://arxiv.org/abs/1811.00064>

A representation of joint moments of CUE characteristic polynomials in terms of Painlevé functions

Estelle Basor, Pavel Bleher, Robert Buckingham, Tamara Grava, Alexander Its, Elizabeth Its, Jonathan P. Keating

<http://arxiv.org/abs/1811.00248>

Hankel determinants for convolution powers of Catalan numbers

Ying Wang, Guoce Xin

<http://arxiv.org/abs/1811.01024>

From multiline queues to Macdonald polynomials via the exclusion process

Sylvie Corteel, Olya Mandelshtam, Lauren Williams

<http://arxiv.org/abs/1811.01047>

Cylindric rhombic tableaux and the two-species ASEP on a ring  
Sylvie Corteel, Olya Mandelshtam, Lauren Williams

<http://arxiv.org/abs/1811.01455>

Euler matrices and their algebraic properties revisited  
Yamilet Quintana, William Ramírez, Alejandro Urieles

<http://arxiv.org/abs/1811.02065>

$SU_q(3)$  corepresentations and bivariate  $q$ -Krawtchouk polynomials  
Geoffroy Bergeron, Erik Koelink, Luc Vinet

<http://arxiv.org/abs/1811.02490>

$k$ -Schur expansions of Catalan functions  
Jonah Blasiak, Jennifer Morse, Anna Pun, Daniel Summers

<http://arxiv.org/abs/1811.02724>

Combinatorics of cluster structures in Schubert varieties  
Khrystyna Serhiyenko, Melissa Sherman-Bennett, Lauren Williams

<http://arxiv.org/abs/1811.03475>

Orthogonal polynomials with ultra-exponential weight functions: an explicit solution to the Ditkin-Prudnikov problem  
Semyon Yakubovich

<http://arxiv.org/abs/1811.04203>

Bargmann and Barut-Girardello models for the Racah algebra  
Hendrik De Bie, Plamen Iliev, Luc Vinet

<http://arxiv.org/abs/1812.04454>

On Series Expansions of Capparelli's Infinite Product  
Andrew V. Sills

<http://arxiv.org/abs/1811.05276>

Asymptotics of Integrals of Some Functions Related to the Degenerate Third Painlevé Equation  
A. V. Kitaev, A. Vartanian

<http://arxiv.org/abs/1811.05440>

Cyclic quasi-symmetric functions  
Ron M. Adin, Ira M. Gessel, Victor Reiner, Yuval Roichman

<http://arxiv.org/abs/1811.05820>

Spectral representation of some weighted Hankel matrices and orthogonal polynomials from the Askey scheme  
František Štampach, Pavel Šťovíček

<http://arxiv.org/abs/1811.06592>

Matrix valued Laguerre polynomials  
Erik Koelink, Pablo Román

<http://arxiv.org/abs/1811.06725>  
Inhomogeneous Restricted Lattice Walks  
Manfred Buchacher, Manuel Kauers

<http://arxiv.org/abs/1811.07219>  
Matrix valued Hermite polynomials, Burchnell formulas and non-abelian Toda lattice  
Mourad E. H. Ismail, Erik Koelink, Pablo Román

<http://arxiv.org/abs/1811.07756>  
Summing Lambert Series in Euler's  $q$ -Exponential Functions  
Ruiming Zhang

<http://arxiv.org/abs/1811.09274>  
Rational solutions of higher order Painlevé systems I  
Peter A. Clarkson, David Gómez-Ullate, Yves Grandati, Robert Milson

<http://arxiv.org/abs/1811.09359>  
The Higgs and Hahn algebras from a Howe duality perspective  
Luc Frappat, Julien Gaboriaud, Luc Vinet, Stéphane Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1811.10186>  
Rational solutions of dressing chains and higher order Painlevé equations  
D. Gomez-Ullate, Y. Grandati, S. Lombardo, R. Milson

<http://arxiv.org/abs/1811.10985>  
Quadrature rules from a  $R_{II}$  type recurrence relation and associated quadrature rules on the unit circle  
Cleonic F. Bracciali, Junior A. Pereira, A. Sri Ranga

<http://arxiv.org/abs/1811.11266>  
Series solution of a ten-parameter second order differential equation with three regular and one irregular singularities  
A. D. Alhaidari

<http://arxiv.org/abs/1811.11285>  
On identities of the Rogers-Ramanujan type  
Andrew V. Sills

<http://arxiv.org/abs/1811.11407>  
The Heun-Askey-Wilson algebra and the Heun operator of Askey-Wilson type  
Pascal Baseilhac, Satoshi Tsujimoto, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/1812.00316>  
A Conjectured Integer Sequence Arising From the Exponential Integral  
Richard P. Brent, M. L. Glasser, Anthony J. Guttmann

<http://arxiv.org/abs/1812.00459>  
Trace formulas applied to the Riemann  $\zeta$ -function  
Mark S. Ashbaugh, Fritz Gesztesy, Lotfi Hermi, Klaus Kirsten, Lance Littlejohn, Hagop Tossounian



<http://arxiv.org/abs/1812.01282>

A solution to the Al-Salam-Chihara moment problem  
Wolter Groenevelt

<http://arxiv.org/abs/1812.01424>

Untrodden pathways in the theory of the restricted partition function  $p(n, N)$   
Atul Dixit, Pramod Eyyunni, Bibekananda Maji, Garima Sood

<http://arxiv.org/abs/1812.01446>

Multiple Hermite polynomials and simultaneous Gaussian quadrature  
Walter Van Assche, Anton Vuerinckx

<http://arxiv.org/abs/1812.01964>

Large gap asymptotics for Airy kernel determinants with discontinuities  
Christophe Charlier, Tom Claeys

<http://arxiv.org/abs/1812.02116>

Brezin-Gross-Witten tau function and isomonodromic deformations  
Marco Bertola, Giulio Ruzza

<http://arxiv.org/abs/1812.02196>

Universality Properties of Gaussian Quadrature, The Derivative Rule, and a Novel Approach to Stieltjes Inversion  
William P. Reinhardt

<http://arxiv.org/abs/1812.02922>

Dissections of strange  $q$ -series  
Scott Ahlgren, Byungchan Kim, Jeremy Lovejoy

<http://arxiv.org/abs/1812.03709>

Unimodal Sequence Generating Functions Arising from Partition Ranks  
Kathrin Bringmann, Chris Jennings-Shaffer

<http://arxiv.org/abs/1812.04490>

Disturbing the Dyson Conjecture (in a GOOD Way)  
Andrew V. Sills, Doron Zeilberger

<http://arxiv.org/abs/1812.05546>

On simplifications of certain  $q$ -multisums  
Andrew V. Sills

<http://arxiv.org/abs/1812.05580>

A partition bijection related to the Rogers-Selberg identities and Gordon's theorem  
Andrew V. Sills

<http://arxiv.org/abs/1812.06324>

Some  $q$ -supercongruences from transformation formulas for basic hypergeometric series  
Victor J. W. Guo, Michael J. Schlosser

<http://arxiv.org/abs/1812.06560>

Perturbations of Christoffel-Darboux kernels. I: detection of outliers  
Bernhard Beckermann, Mihai Putinar, Edward B. Saff, Nikos Stylianopoulos

<http://arxiv.org/abs/1812.07193>

Untying The Gordian Knot via Experimental Mathematics  
Yukun Yao, Doron Zeilberger

<http://arxiv.org/abs/1812.07231>

Linearization and Krein-like functionals of hypergeometric orthogonal polynomials  
J. S. Dehesa, J. J. Moreno-Balcázar, I. V. Toranzo

<http://arxiv.org/abs/1812.07256>

Scaling Limits of Jacobi Matrices and the Christoffel–Darboux Kernel  
Jonathan Breuer

<http://arxiv.org/abs/1812.07542>

Ramanujan–Slater type identities related to the moduli 18 and 24  
James McLaughlin, Andrew V. Sills

<http://arxiv.org/abs/1812.07950>

Uniformly convergent expansions for the generalized hypergeometric functions of the Bessel and Kummer types  
Jose L. Lopez, Pedro J. Pagola, Dmitrii B. Karp

<http://arxiv.org/abs/1812.08222>

Rogers–Ramanujan computer searches  
James McLaughlin, Andrew V. Sills, Peter Zimmer

<http://arxiv.org/abs/1812.08553>

Orthogonal dualities of Markov processes and unitary symmetries  
Gioia Carinci, Chiara Franceschini, Cristian Giardinà, Wolter Groenevelt, Frank Redig

<http://arxiv.org/abs/1812.09098>

Sign–balance of various Eulerian polynomials  
Zhicong Lin, David G. L. Wang, Jiang Zeng

<http://arxiv.org/abs/1812.10667>

Asymptotics of Chebyshev Polynomials, IV. Comments on the Complex Case  
Jacob S. Christiansen, Barry Simon, Maxim Zinchenko

<http://arxiv.org/abs/1812.10764>

An asymptotic expansion for a sum of modified Bessel functions with quadratic argument  
R. B. Paris

<http://arxiv.org/abs/1812.11322>

On a  $q$ -deformation of modular forms  
Victor J. W. Guo, Wadim Zudilin

<http://arxiv.org/abs/1812.11659>

Proof of a basic hypergeometric supercongruence modulo the fifth power of a cyclotomic polynomial  
Victor J. W. Guo, Michael J. Schlosser

## Other Relevant OP-SF E-Prints

<http://arxiv.org/abs/1811.00149>

Time-dependent Darboux (supersymmetric) transformations for non-Hermitian quantum systems

Julia Cen, Andreas Fring, Thomas Frith

<http://arxiv.org/abs/1811.00319>

Adaptive stochastic Galerkin FEM for lognormal coefficients in hierarchical tensor representations

Martin Eigel, Manuel Marschall, Max Pfeffer, Reinhold Schneider

<http://arxiv.org/abs/1811.00582>

Wellposedness of the two-sided variable coefficient Caputo flux fractional diffusion equation and error estimate of its spectral approximation

Xiangcheng Zheng, V. J. Ervin, Hong Wang

<http://arxiv.org/abs/1811.00727>

Sampling theorem based Fourier-Legendre transform

S. Kuwata, K. Kawaguchi

<http://arxiv.org/abs/1811.01130>

A generalization of the Riemann-Siegel formula

Cormac O'Sullivan

<http://arxiv.org/abs/1811.01200>

Proof of a rational Ramanujan-type series for  $1/\pi$ . The fastest one in level 3

Jesús Guillera

<http://arxiv.org/abs/1811.01246>

Maximal estimates for a generalized spherical mean Radon transform acting on radial functions

Óscar Ciaurri, Adam Nowak, Luz Roncal

<http://arxiv.org/abs/1811.01613>

On the zeros of Epstein zeta functions near the critical line

Yoonbok Lee

<http://arxiv.org/abs/1811.01654>

Ramanujan expansions of arithmetic functions of several variables over  $\mathbb{F}_q$

Tianfang Qi, Su Hu

<http://arxiv.org/abs/1811.01836>

Sonin's argument, the shape of solitons, and the most stably singular matrix

Rowan Killip, Monica Visan

<http://arxiv.org/abs/1811.02151>

Supersymmetric Quantum mechanics on the radial lines

F. Bouzeffour, M. Garayev

<http://arxiv.org/abs/1811.02418>

Non-trivial zeros of Riemann's Zeta function via revised Euler–Maclaurin–Siegel and Abel–Plana summation formulas  
Xiao–Jun Yang

<http://arxiv.org/abs/1811.02717>

Leibniz type rule:  $\Psi$ –Hilfer fractional derivative  
J. Vanterler da C. Sousa, E. Capelas de Oliveira

<http://arxiv.org/abs/1811.02720>

Zernike Polynomials: Evaluation, Quadrature, and Interpolation  
Philip Greengard, Kirill Serkh

<http://arxiv.org/abs/1811.03287>

A New Count Regression Model including Gauss Hypergeometric Function with an application to model demand of health services  
Deepesh Bhati, Ishfaq Ahmad Shah

<http://arxiv.org/abs/1811.03553>

Mixed moment of  $GL(2)$  and  $GL(3)$   $L$ –functions  
Olga Balkanova, Gautami Bhowmik, Dmitry Frolenkov, Nicole Raulf

<http://arxiv.org/abs/1811.03663>

New Tribonacci Recurrence Relations and Addition Formulas  
Kunle Adegoke, Adenike Olatinwo, Winning Oyekanmi

<http://arxiv.org/abs/1811.03770>

New  $p$ –adic hypergeometric functions concerning with syntomic regulators  
Masanori Asakura

<http://arxiv.org/abs/1811.03937>

Zeros of the Wigner Distribution and the Short–Time Fourier Transform  
Karlheinz Gröchenig, Philippe Jaming, Eugenia Malinnikova

<http://arxiv.org/abs/1811.03940>

Hermitian  $K$ –theory, Dedekind  $\zeta$ –functions, and quadratic forms over rings of integers in number fields  
Jonas Irgens Kylling, Oliver Röndigs, Paul Arne Østvær

<http://arxiv.org/abs/1811.03971>

The interrelation of the special double confluent Heun equation and the equation of RSJ model of Josephson junction revisited  
Sergey I. Tertychniy

<http://arxiv.org/abs/1811.04033>

The discrete cosine transform on triangles  
Bastian Seifert, Knut Hüper

<http://arxiv.org/abs/1811.04050>

Painlevé equations from Nakajima–Yoshioka blow–up relations  
M. Bershtein, A. Shchekhin

<http://arxiv.org/abs/1811.04157>

On the geometry, flows and visualization of singular complex analytic vector fields on Riemann surfaces

Alvaro Alvarez–Parrilla, Jesús Muciño–Raymundo, Selene Solorza–Calderón, Carlos Yee–Romero

<http://arxiv.org/abs/1811.04200>

Interpolation between Brezis–Vázquez and Poincaré inequalities on nonnegatively curved spaces: sharpness and rigidities

Alexandru Kristály, Anikó Szakál

<http://arxiv.org/abs/1811.04452>

The arithmetic of vector-valued modular forms on  $\Gamma_0(2)$

Richard Gottesman

<http://arxiv.org/abs/1811.04530>

On the discrete mean of the derivative of Hardy’s  $Z$ -function

Hirota Kobayashi

<http://arxiv.org/abs/1811.04701>

Weyl–Mahonian Statistics for Weighted Flags of Type A–D

Roland Bacher

<http://arxiv.org/abs/1811.04867>

An Argument in Confirmation of the Riemann Hypothesis

R. C. McPhedran

<http://arxiv.org/abs/1811.04915>

Weyl Asymptotics for Perturbations of Morse Potential and Connections to the Riemann Zeta Function

Rob Rahm

<http://arxiv.org/abs/1811.05189>

Regulator proofs for Boyd’s identities on genus 2 curves

Matilde Lalín, Gang Wu

<http://arxiv.org/abs/1811.05277>

Zeros of a polynomial of  $\zeta^{(j)}(s)$

Tomokazu Onozuka

<http://arxiv.org/abs/1811.05573>

From Steklov to Neumann and beyond, via Robin: the Szegő way

Pedro Freitas, Richard S. Laugesen

<http://arxiv.org/abs/1811.05837>

Time-Varying Isotropic Vector Random Fields on Compact Two-Point Homogeneous Spaces

Chunsheng Ma, Anatoliy Malyarenko

<http://arxiv.org/abs/1811.05861>

Approximation of the derivatives of the logarithm of the Riemann zeta-function in the critical strip

Sergey Sekatskii, Stefano Beltraminelli

<http://arxiv.org/abs/1811.06005>

Factoring Non-negative Operator Valued Trigonometric Polynomials in Two Variables  
Michael A. Dritschel

<http://arxiv.org/abs/1811.06022>

On the multivariable generalization of Anderson–Apostol sums  
Isao Kiuchi, Friedrich Pillichshammer, Sumaia Saad Eddin

<http://arxiv.org/abs/1811.06174>

On a Central Binomial Series Related to  $\zeta(4)$   
Vivek Kaushik

<http://arxiv.org/abs/1811.06423>

On Clamped Plates with Log-Convex Density  
L. M. Chasman, Jeffrey J. Langford

<http://arxiv.org/abs/1811.06475>

The  $q$ -Hahn PushTASEP  
Ivan Corwin, Konstantin Matveev, Leonid Petrov

<http://arxiv.org/abs/1811.06636>

Massive Scaling Limit of the Ising Model: Subcritical Analysis and Isomonodromy  
S. C. Park

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Generalizations of Rodrigues Type Formulas for Hypergeometric Difference Equations on Nonuniform Lattices  
Jinfa Cheng, Lukun Jia

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“Killing Mie Softly”: Analytic Integrals for Resonant Scattering States  
R. C. McPhedran, B. Stout

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Relative strongly regular holonomic  $\mathcal{D}$ -modules and the Riemann–Hilbert correspondence  
Luisa Fiorot, Teresa Monteiro Fernandes

<http://arxiv.org/abs/1811.07326>

On weighted conditions for the absolute convergence of Fourier integrals  
Yu. Kolomoitsev, E. Lifyand

<http://arxiv.org/abs/1811.07686>

Representations of mock theta functions  
Dandan Chen, Liuquan Wang

<http://arxiv.org/abs/1811.07704>

On the Approximation Properties of Cesàro Means of Negative Order of Vilenkin–Fourier Series  
Tsitsino Tepnadze

<http://arxiv.org/abs/1811.07705>

On the Approximation Properties of Cesàro Means of Negative Order of double Vilenkin–Fourier Series  
Tsitsino Tepnadze

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Painlevé–II profile of the shadow kink in the theory of light–matter interaction in nematic liquid crystals  
Christos Sourdis

<http://arxiv.org/abs/1811.07967>

Hypergeometric function and Modular Curvature II. Connes–Moscovici functional relation after Lesch’s work  
Yang Liu

<http://arxiv.org/abs/1811.08261>

On double sum generating functions in connection with some classical partition theorems  
Ali K. Uncu

<http://arxiv.org/abs/1811.08367>

On the convergence of Cesàro means of negative order of Vilenkin–Fourier series  
Gvantsa Shavardenidze

<http://arxiv.org/abs/1811.08863>

BPS Invariants for Seifert Manifolds  
Hee–Joong Chung

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Conformal Equivalence of Measures and Dynamics of Orthogonal Polynomials  
Signe Emalia Jensen, Carsten Lunde Petersen

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A new way to deduce  $\zeta(1 - k) = -B_k/k$   
Chenfeng He

<http://arxiv.org/abs/1811.09254>

Semiclassical asymptotic behavior of orthogonal polynomials  
D. R. Yafaev

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Zastavnyi Operators and Positive Definite Radial Functions  
T. Faouzi, E. Porcu, M. Bevilacqua, I. Kondrashuk

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A formula for the partition function that “counts”  
Yuriy Choliy, Andrew V. Sills

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Combined homotopy and Galerkin stability analysis of Mathieu–like equations  
Jeet Desai, Amol Marathe

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Infinite sets of  $b$ -additive and  $b$ -multiplicative Ramanujan–Hardy numbers  
Viorel Nitica

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The Coulomb gas, potential theory and phase transitions  
Robert J. Berman

<http://arxiv.org/abs/1811.10441>

On the complete monotonicity of the three parameter generalized Mittag–Leffler function  
 $E_{\alpha,\beta}^{\gamma}(-x)$   
K. Górska, A. Horzela, A. Lattanzi, and T. K. Pogány

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Some differential equations for the Riemann  $\theta$ -function on Jacobians  
Robert Wilms

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Extrapolating the precision of the Hypergeometric Resummation to Strong couplings with application to the  $\mathcal{PT}$ -Symmetric  $i\varphi^3$  Field Theory  
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Sobolev–Type Inequalities for Dunkl Operators  
Andrei Velicu

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Kerr–de Sitter Quasinormal Modes via Accessory Parameter Expansion  
Fábio Novaes, Cássio Marinho, Máté Lencsés, Marc Casals

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Four identities related to third order mock theta functions  
Su–Ping Cui, Nancy S. S. Gu, Chen–Yang Su

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A Riemann–Hilbert correspondence for Cartier crystals  
Tobias Schedlmeier

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The smallest parts function associated with  $\omega(q)$   
Liuquan Wang, Yifan Yang

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On the Open Question of The Tracy–Widom Distribution of  $\beta$ -Ensemble With  $\beta=6$   
Yuqi Li

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The Riemann Minimal Examples in Lorentz–Minkowski Space  $L^3$   
Seher Kaya, Rafael López

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Restoring discrete Painlevé equations from an  $E_8^{(1)}$ -associated one  
Basil Grammaticos, Alfred Ramani, Ralph Willox



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Irregular Hodge numbers of confluent hypergeometric differential equations  
Claude Sabbah, Jeng-Daw Yu

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$S$ -Matrix of Nonlocal Scalar Quantum Field Theory in the Representation of Basis Functions  
I. V. Chebotarev, V. A. Guskov, S. L. Ogarkov, M. Bernard

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Ramanujan's theta functions and linear combinations of four triangular numbers  
Zhi-Hong Sun

<http://arxiv.org/abs/1812.01143>

A Nonlinear Transform for the Diagonalization of the Bernoulli-Laplace Diffusion Model and Orthogonal Polynomials  
Chjan Lim, William Pickering

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New Pentagon Identities Revisited  
Shahriyar Jafarzade

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An estimate of approximation of a matrix-valued function by an interpolation polynomial  
V. G. Kurbatov, I. V. Kurbatova

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A note on the maximum of the Riemann zeta function on the 1-line  
Winston Heap

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Box-splines orthogonal projections  
M. Beška, K. Dziedziul

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Wronskian Appell Polynomials and Symmetric Functions  
Niels Bonneux, Zachary Hamaker, John Stembridge, Marco Stevens

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A heat kernel version of Miyachi's Theorem for the Laguerre hypergroup  
Mohammed El Kassimi, Said Fahlaoui

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A corrected spectral method for Sturm-Liouville problems with unbounded potential at one endpoint  
Cecilia Magherini

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Inverse scattering transforms and  $N$ -double-pole solutions for the derivative NLS equation with zero/non-zero boundary conditions  
Guoqiang Zhang, Zhenya Yan

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Some Interesting Properties of the Riemann Zeta Function

Johar M. Ashfaque

<http://arxiv.org/abs/1812.02644>

Addendum: A separation in modulus property of the zeros of a partial theta function

Vladimir Petrov Kostov

<https://arxiv.org/abs/1812.02762>

Strong version of Andrica's conjecture

M. Visser

<http://arxiv.org/abs/1812.03820>

Ramanujan's theta functions and linear combinations of three triangular numbers

Zhi-Hong Sun

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On poly-Bell numbers and polynomials

Ghania Guettai, Diffalah Laissaoui, Mourad Rahmani, Madjid Sebaoui

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Radial basis function-generated finite differences with Bessel weights for the 2D Helmholtz equation

Mauricio A. Londoño A., Hebert Montegranario

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Fractional smoothness in  $L^p$  with Dunkl weight and its applications

D. V. Gorbachev, V. I. Ivanov

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Krawtchouk polynomials and quadratic semi-regular sequences

Stavros Kousidis

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Exact Solution of the Relativistic Dunkl Oscillator in  $(2 + 1)$  Dimensions

R. D. Mota, D. Ojeda-Guillén, M. Salazar-Ramírez, V. D. Granados

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Inequalities involving the gamma and digamma functions

Necdet Batir

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Dirac brushes (or, the fractional Fourier transform of Dirac combs)

Joe Viola

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Markov's inequality on Koornwinder's domain in  $L^p$  norms

Tomasz Beberok

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Jacobi polynomials, their quadratic transformations and nonnegative linearization

Stefan Kahler

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Supplement to Neuschel's paper "Asymptotics for Ménage polynomials and certain hypergeometric polynomials of type  ${}_3F_1$ "  
Shotaro Nakai, Hideshi Yamane

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A new formula for  $\zeta(k)$   
Chenfeng He

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On some Lambert series identities of Gosper and applications  
Mohamed El Bachraoui

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Several  $q$ -series related to Ramanujan's theta functions  
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Gaussian fluctuations for products of random matrices  
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A pair of commuting hypergeometric operators on the complex plane and bispectrality  
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Asymptotic analysis of Dotsenko–Fateev integrals  
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Some Numeric Hypergeometric Supercongruences  
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Criterion of reality of zeros in a polynomial sequence satisfying a three-term recurrence relation  
Innocent Ndikubwayo

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Supercongruences arising from hypergeometric series identities  
Ji-Cai Liu

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Bessel Functions and the Wave Equation  
Alberto Torchinsky

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Eisenstein series and an asymptotic for the  $K$ -Bessel function  
Jimmy Tseng

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Inversion of Rankin–Cohen operators via Holographic Transform  
Toshiyuki Kobayashi, Michael Pevzner

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Vladimir Dragović, Renat Gontsov, Vasilisa Shramchenko

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Radii of starlikeness and convexity of generalized Struve functions  
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Proof of a congruence concerning truncated hypergeometric series  ${}_6F_5$   
Chen Wang

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Adjoint Difference Equation for a Nikiforov–Uvarov–Suslov difference equation of hypergeometric type on Non-uniform Lattices  
Jinfa Cheng, Weizhong Dai

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Hopping from Chebyshev polynomials to permutation statistics  
Jordan O. Tirrell, Yan Zhuang

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On the relationship between Weyl functions of Jacobi matrices and response vectors for special dynamical systems with discrete time  
A. S. Mikhaylov, V. S. Mikhaylov, S. A. Simonov

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Bound State Solution of the Klein–Fock–Gordon equation with the Hulthén plus a Ring-Shaped like potential within SUSY quantum mechanics  
A. I. Ahmadov, Sh. M. Nagiyev, M. V. Qocayeva, K. Uzun, V. A. Tarverdiyeva

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Heat kernel for higher-order differential operators in Euclidean space  
W. Wachowski, P. I. Pronin

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Sharp local smoothing estimates for Fourier integral operators  
David Beltran, Jonathan Hickman, Christopher D. Sogge

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Coxeter group actions and limits of hypergeometric series  
Richard M. Green, Ilia D. Mishev, Eric Stade

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Asymptotic and numerical analysis of a stochastic PDE model of volume transmission  
Sean D. Lawley, Varun Shankar

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Recurrence relations for Mellin transforms of  $GL(n, \mathbb{R})$  Whittaker functions  
Eric Stade, Tien D. Trinh

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Universality and distribution of zeros and poles of some zeta functions  
Kristian Seip

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Some trigonometric integrals and the Fourier transform of a spherically symmetric exponential function  
Hideshi Yamane

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Subresultants of  $(x - \alpha)^m$  and  $(x - \beta)^n$ , Jacobi polynomials and complexity  
A. Bostan, T. Krick, A. Szanto, M. Valdetaro

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Chebyshev coordinates and Salem numbers  
Stefano Capparelli, Alberto Del Fra

<http://arxiv.org/abs/1812.11939>

Cutoff and discrete Product Structure in ASEP  
Peter Nejjar

Topic #9 ——— OP – SF Net 26.1 ——— January 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 26.2 should be sent by March 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).

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Sarah Post, OP–SF NET co–editor  
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Topic #10      ———      OP – SF Net 26.1      ———      January 15, 2019

From: OP–SF Net Editors

Subject: Thought of the Month by **Sir Isaac Newton**

Plato is my friend; Aristotle is my friend, but my greatest friend is truth.

**Sir Isaac Newton** (25 December 1642 – 20 March 1726/27)

*Comment by Walter Van Assche:*

By the way, there is an interesting feature regarding Newton’s birthdate and date of death. You have reported them to be December 25, 1642 and March 20, 1726/1727. The explanation for this is that England was still using the Julian calendar at the time and according to that calendar he was born December 25, 1642 (on Christmas day). The difference with the Gregorian calendar which we use nowadays (and which was in use in most catholic countries in Europe) was 10 days, so according to the Gregorian calendar he was born on January 4, 1643.

The date of his death is even more confusing. According to the Julian calendar he died on March 20, 1726. But by then, the difference with the Gregorian calendar had already increased to 11 days, so the Gregorian date is March 31<sup>st</sup>, and surprisingly the year would be 1727. That is because in England the new year started on March 25<sup>th</sup> (spring equinox) instead of January 1<sup>st</sup>.