

# OP-SF NET – Volume 29, Number 6 – November 15, 2022

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: OPSFA-17 (June 2024) in Granada, Spain
2. Announcement: Integrable Systems and OP, Cape Town, South Africa
3. Report by **Cohl**: Special Session at AMS Western Sectional Meeting in Salt Lake City, Utah
4. Report by **Marcellán**: 2 Days in Orthogonal Polynomials held in Granada, Spain
5. Two remembrances of **Steven Zelditch** (1953-2022)
  - 5.1. **Amir Vig**
  - 5.2. **Maciej Zworski**
6. Preprints in arXiv.org
7. Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)
8. Thought of the Month by **Paul Halmos**

**Calendar of Events:**

**December 5-10, 2022**

Escuela de Invierno de Análisis (Analysis Winter School)  
Instituto de Matemáticas, CU, UNAM, Ciudad de México  
<https://www.eia22.matem.unam.mx/>

**April 1-2 (Saturday-Sunday), 2023**

2023 Spring Eastern Virtual Sectional Meeting, American Mathematical Society,  
Associate Secretary for the AMS Scientific Program: Steven H. Weintraub, [shw2@lehigh.edu](mailto:shw2@lehigh.edu).

*AMS Special Session on Hypergeometric functions,  $q$ -Series and Adjacent Topics*,  
Organized by Howard Cohl, Robert Maier and Roberto S. Costas-Santos,  
[http://www.ams.org/meetings/sectional/2305\\_progfull.html](http://www.ams.org/meetings/sectional/2305_progfull.html)

## April 11–15, 2023

Workshop on Integrable Systems and Orthogonal Polynomials—Numerical and Analytical Perspectives

AIMS South Africa, Muizenberg, Cape Town, South Africa

<https://aims.ac.za/event/workshop-on-integrable-systems-and-orthogonal-polynomials-numerical-and-analytical-perspectives/>

## June 12–21, 2023

Foundations of Computational Mathematics (FoCM 2023), Sorbonne University, Paris, France

<https://focm2023.org/>

Workshops related to our SIAG:

### Session II.5, June 15–17, 2023: **Random Matrices**

Organizers: Ioana Dumitriu, University of Washington, Sheehan Olver, Imperial College

### Session III.2, June 19–21, 2023: **Approximation Theory**

Organizers: Albert Cohen, Sorbonne Université

Peter Binev, University of South Carolina, Guergana Petrova, Texas A&M University

### Session III.7, June 19–21, 2023: **Special Functions and Orthogonal Polynomials**

Organizers: Ana Loureiro, University of Kent,

Paco Marcellán, Universidad Carlos III de Madrid,

Andrei Martínez-Finkelshtein, Baylor University and Universidad de Almería.

Topic #1 ——— OP – SF Net 29.6 ——— November 15, 2022

From: Miguel A. Piñar ([mpinar@ugr.es](mailto:mpinar@ugr.es))

Subject: Announcement: OPSFA–17 (June 2024) in Granada, Spain

## **17<sup>th</sup> International Symposium on Orthogonal Polynomials, Special Functions and Applications, Universidad de Granada, Granada, Spain, June 24–28, 2024.**

The 17<sup>th</sup> Symposium on Orthogonal Polynomials, Special Functions and Applications (OPSFA–17) will take place from June 24 to June 28, 2024, in Granada, Spain. The Institute of Mathematics (IMAG) and the [Faculty of Sciences](#) of the [University of Granada](#) will support the organization of the symposium. The conference venue will be the Faculty of Sciences of the University of Granada.

The University of Granada is one of the most prominent universities in Spain and a very important source of scientific research. Granada is an iconic Andalusian destination well worth visiting. The city has a wealth of attractions, including UNESCO World Heritage Sites.

More information on the symposium will be provided in due time. All interested colleagues are cordially invited to attend this meeting.

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

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

Local Organizing Committee:

- Antonia M. Delgado
- Lidia Fernández
- Teresa E. Pérez
- Miguel A. Piñar
- Joaquín Sánchez

Topic #2 ——— OP – SF Net 29.6 ——— November 15, 2022

From: Kerstin Jordaan ([jordakh@unisa.ac.za](mailto:jordakh@unisa.ac.za)) and Peter Clarkson ([P.A.Clarkson@kent.ac.uk](mailto:P.A.Clarkson@kent.ac.uk))  
Subject: Announcement: Integrable Systems and OP, Cape Town, South Africa

Workshop on Integrable Systems and Orthogonal Polynomials:  
*Numerical and Analytical Perspectives,*  
April 11–15, 2023

African Institute for Mathematical Sciences (AIMS), Muizenberg, Cape Town, South Africa.  
Closing date for applications: **December 15, 2022.**



Figure 1: Muizenberg, South Africa

This workshop will focus on the relationship between integrable systems, in particular the Painlevé equations and discrete Painlevé equations, and orthogonal polynomials from both numerical and analytical perspectives. The Painlevé equations, continuous and discrete, are nonlinear analogs of the classical special functions and form the core of modern special function theory. In recent years various interesting connections between Painlevé equations and orthogonal polynomials have been studied. For example, rational solutions and special function solutions of Painlevé equations have a close relationship with orthogonal polynomials. The relationship between orthogonal polynomials and Painlevé equations has interesting applications, for example to random matrices. From

a numerical perspective, reliable and efficient evaluation of solutions of Painlevé equations poses significant challenges, and several approaches have been proposed in the literature, including initial value and boundary value methods in the complex plane and numerical calculation based on the Riemann–Hilbert formulation. Presentations will include survey type lectures on important developments in the area as well as lectures on recent results and open problems.

Target Audience: Researchers, Postdoctoral Fellows, PhD and Master’s students.

Organisers: **Kerstin Jordaan** (University of South Africa) and **Peter Clarkson** (University of Kent)

For more information and to express an interest in attending the workshop, please visit the following [link](#).

Academic enquiries: Kerstin Jordaan ([jordakh@unisa.ac.za](mailto:jordakh@unisa.ac.za)).

Closing date for applications: **December 15, 2022**.

Topic #3 ——— OP – SF Net 29.6 ——— November 15, 2022

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

Subject: Report by **Cohl**: Special Session at AMS Western Sectional Meeting in Salt Lake City, Utah



Figure 2: Surrounding Mountains in Salt Lake City, Utah

On October 22–23, 2022, there was held the [Fall AMS Western Sectional Meeting](#), University of Utah, Salt Lake City, UT, USA. Howard Cohl, NIST, Robert Maier, University of Arizona, and Roberto Costas–Santos, Universidad Loyola Andalusía, organized a special session at the meeting entitled, *hypergeometric functions and  $q$ -series*. The special session was held on Saturday October 22 from 3pm–4.30pm and then again at 9.30am–11 am on Sunday October 23. In the special session there were talks by the following individuals:

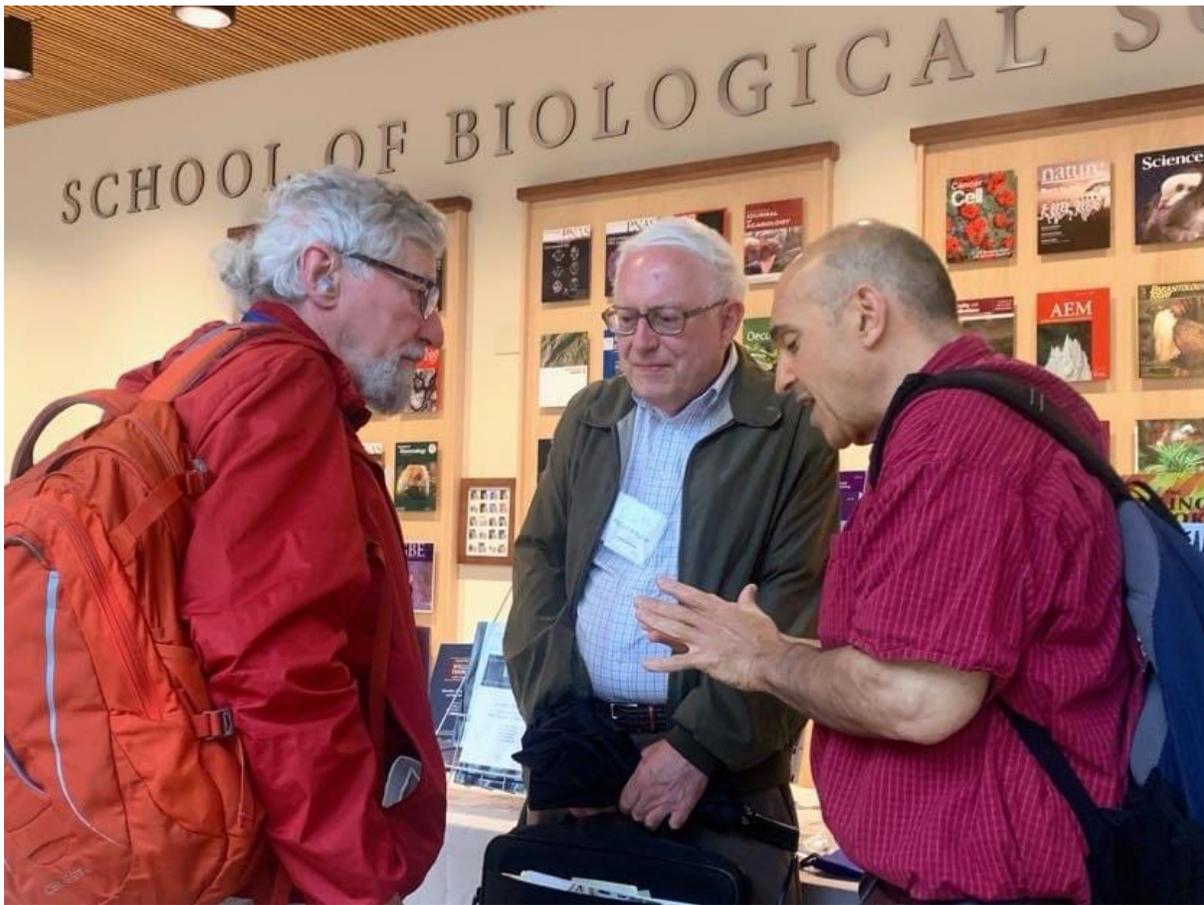


Figure 3: Howard Cohl and Robert Maier discussing a planned AMS Contemporary Mathematics Proceedings on *Hypergeometric functions,  $q$ -series and generalizations* with Sergei Gelfand, Publisher, AMS.

- **Howard S. Cohl**, National Institute of Standards and Technology, Gaithersburg, Maryland (working remotely out of Ladera Ranch, California)  
*Representations and special values for nonsymmetric and symmetric Poisson kernels of the Askey-Wilson polynomials*
- **Nicholas S. Witte**, Victoria University of Wellington, Wellington, New Zealand  
*A novel extension of the extreme value distributions - the Fréchet, Weibull and Gumbel - and infinite products of Gauß hypergeometric functions.*
- **Robert S. Maier**, University of Arizona, Tucson, Arizona  
*From Triangular Recurrences to Operator Ordering Identities*
- **Timothy J. Huber\***, James Mc Laughlin, Dongxi Ye, University of Texas Rio Grande Valley, Edinburg, Texas (\* indicates the speaker)  
*Lacunary eta quotients with identically vanishing coefficients*
- **James Brandt Kronholm**, University of Texas Rio Grande Valley, Edinburg, Texas  
*Crank generating functions for partitions with bounded part size and number of parts*
- **Sergei K. Suslov**, Arizona State University, Tempe, Arizona  
*The role of hypergeometric functions in the discovery of wave mechanics*

The organization of the meeting, led by **Michelle Ann Manes**, Department of Mathematics, University of Hawaii, Honolulu, and the staff from the Department of Mathematics, University of Utah



Figure 4: Counterclockwise around the table starting from the right: Nicholas Witte, Sergei Suslov, Howard Cohl, and Robert Maier relaxing before a Japanese meal. Photo taken by Roman Suslov.

was superb. They provided an endless stream of coffee and snacks which was nice. It was a great opportunity to move across the country and enjoy some fresh air, talk and catch up, one on one with colleagues. There was a fantastic invited address by **Bhargav Bhatt**, University of Michigan entitled *Algebraic geometry in mixed characteristic*.

The Special Session attendees converged on Salt Lake City from around the country. Robert Maier flew into Salt Lake City for the first time in decades on a direct flight from Tucson, Arizona. Tim Huber and Brandt Kronholm, departed the University of Texas Rio Grande Valley, Edinburg, Texas, by air through Dallas, Texas. Howard Cohl departed his remote work location in Orange County, California and conveniently flew out of John Wayne Airport in Santa Ana, California. Sergei Suslov and his son Roman completed a 12 hour drive (almost due north) with his devoted son Roman in his Tacoma truck from Tempe, Arizona (near Phoenix). Roman and Sergei were able to spend some enjoyable one on one time together and the rest of us were also able to enjoy Roman's big-hearted (and often useful!) company as well.

Fortunately, Nicholas Witte, a professor and special functions savant from the School of Mathematics and Statistics of Victoria University of Wellington, New Zealand attended the special session in Salt Lake City. FYI, Wellington is the capital of New Zealand. He was nearing the end of his one year sabbatical visit to the United States in Lubbock, Texas (or West Texas according to the locals). His US visit started on October 21<sup>st</sup> 2021 at Texas Tech University, arriving in the lull between the delta and omicron waves. According to him, this was a bit of a leap into the unknown. His one-year visiting position at Texas Tech University was arranged for me by a colleague (Lu Wei) in the Department of Computer Science which was a novel experience for him, but he was already convinced that applications arising from outside of arbitrary boundaries of mathematical disciplines can have a profound influence back on the theory. One of the clear influences on the fields he is active in has been the work of Donald Knuth in enumerative combinatorics and representation theory. He has

noted that the [R-S-K correspondence](#) comes immediately to mind. The meeting in Salt Lake City was just a little step away from Texas in relative distance, and also the special session topics were very close in various ways to his mathematical interests. Witte also presented, in person, at the hybrid [Baylor Analysis Fest in honor of Lance Littlejohn](#), which Cohl also presented at, but virtually (see OPSF-Net [Volume 29, Number 4 – July 15, 2022](#) for a report by Andrei Martínez-Finkelshtein and Fritz Gesztesy on this meeting). We will miss Nicholas for the time being!

Topic #4 ——— OP – SF Net 29.6 ——— November 15, 2022

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

Subject: Report by Marcellán: 2 Days in Orthogonal Polynomials held in Granada, Spain

In November 10–11, the workshop *2 Days in Orthogonal Polynomials* held in Granada. It was organized by the research group on Orthogonality and Approximation (GOYA) of such a university. This is the third edition of a program of joint meetings by University of Almería and University of Granada.



Figure 5: Participants at the Two Days in Orthogonal Polynomials Workshop, Granada, Spain.

35 people, coming from Spanish and Portuguese universities, attended the meeting whose aim was to share recent trends on orthogonal polynomials and special functions and their connections with Potential Theory, Complex Analysis, Linear Algebra, as well as their applications in Optics and Mathematical Physics. The following twelve plenary lectures are delivered. They cover topics on the theory of orthogonal polynomials in several frameworks (multivariate, on the real line, on the unit circle, Sobolev, matrix, exceptional), asymptotic analysis, moment matrices, equilibrium for the distribution of points on surfaces, inequalities for polynomials, among others.

- **Amílcar Branquinho**, Universidade de Coimbra, Portugal  
*Applications of quadratic decomposition for bivariate orthogonal polynomials*
- **María José Cantero** Universidad de Zaragoza  
*Wall polynomials: a tool for Khrushchev's formula*

- **Mirta M. Castro Smirnova**, Universidad de Sevilla  
*Time-and-band limiting for matrix valued orthogonal polynomials*
- **Carmen Escribano**, Universidad Politécnica de Madrid  
*Generalized eigenvalues of moment matrices, density of polynomials density and support of measures*
- **Chelo Ferreira**, Universidad de Zaragoza  
*Convergent and asymptotic expansions of Laplace transforms*
- **María Ángeles García Ferrero**, Universidad de Barcelona  
*Exceptional Jacobi polynomials*
- **Fátima Lizarte**, Universidad de Cantabria  
*On the minimal logarithmic energy on the 2-sphere*
- **Juan Francisco Mañas**, Universidad de Almería  
*Mehler-Heine type asymptotics for families of orthogonal polynomials*
- **Francisco Marcellán**, Universidad Carlos III de Madrid  
*Orthogonal polynomials and truncated normal distribution*
- **Misael E. Marriaga**, Universidad Rey Juan Carlos  
*Zernike-Sobolev polynomials and orthogonal expansions on the unit ball*
- **Ramón Orive**, Universidad de La Laguna  
*From Orthogonal Polynomials to Riesz Equilibrium Problems. The case of unbounded conductors*
- **Joaquim Ortega Cerdà**, Universidad de Barcelona  
*Polynomial hypercontractive inequalities*

A poster session, where young researchers announced preliminary results of their doctoral dissertations, was the opportunity to know the progress in their scientific work.

The meeting was very well organized and the participants enjoyed the friendly atmosphere in the site of the meeting, the Carmen de la Victoria, a very beautiful guest house of the University of Granada located just in front of the Alhambra Palace.

Topic #5 ——— OP – SF Net 29.6 ——— November 15, 2022

From: OP-SF Net Editors

Subject: Two remembrances of **Steven Zelditch** (1953–2022)

**Two remembrances of  
Steven Zelditch  
(September 13, 1953—September 11, 2022)**

by **Vig and Zworski**

Below are two remembrances of Steve Zelditch from some of his colleagues:

**Amir Vig** and **Maciej Zworski**.

For a link to Zelditch's obituary, see:

<https://news.northwestern.edu/stories/2022/09/mathematics-pioneer-steve-zelditch-dies-at-68/>.

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**Amir Vig**, Postdoctoral Assistant Professor, Department of Mathematics,  
University of Michigan, Ann Arbor, Michigan.

## Steven Zelditch Memoriam

Steve Zelditch was a pioneering mathematician who transformed the fields of microlocal analysis, spectral theory and geometry by forging deep connections between distant areas of mathematics. He sadly passed away on September 9<sup>th</sup>, 2022 on the final day of a conference held in his honor. Steve was the advisor of my own PhD advisor, Hamid Hezari, making him my academic grandfather. I looked up to Steve in many ways and his enthusiasm for mathematics has been a true inspiration to me throughout my time in academia.

Steve Zelditch's most important contributions to mathematics were probably his proof of the Quantum Ergodicity Theorem, the Catlin–Tian–Yau–Zelditch expansion of Bergman kernels and his work on the inverse spectral problem. Zelditch's Quantum Ergodicity Theorem makes precise the Bohr correspondence principle in a chaotic setting by using ergodic properties of the underlying classical Hamiltonian flow to show that high energy eigenfunctions (thought of as quantum objects) equidistribute in phase space. The applications of this theorem and its successors (eg. quantum ergodic restriction theorems) have had numerous applications in spectral geometry. For example, they have been used to study nodal sets and domains,  $L^p$  norms of eigenfunctions and more general spectral asymptotics. This work led to the quantum unique ergodicity (QUE) conjecture of Rudnick–Sarnak, which remains wide open in the general setting of negative curvature. In 2010, Lindenstrauss won the Fields Medal in part for his work on QUE in the very special case of arithmetic surfaces with an additional algebraic symmetry. Zelditch's asymptotic expansion of the Bergman kernel gave rise to a new arena in geometry, in which microlocal and semiclassical methods can be used to study Kähler manifolds. Zelditch has also contributed more than anyone to answering the question "Can one hear the shape of a drum?" which was popularized by Mark Kac in 1966. His seminal 2009 Annals paper answered the question affirmatively in the case of analytic planar domains with mirror symmetry and mild dynamical assumptions. In 2019, together with Hamid Hezari, he showed that ellipses of small eccentricity are completely determined by their Laplace spectrum amongst all smooth, bounded planar domains, which is undoubtedly the strongest result to date in the direction of Kac's original problem.

Steve was a prolific writer and had an extraordinary love for mathematics. I remember asking him once if there was any area of math in which he was not interested, to which he replied "no." He found elegant and powerful ways of bridging analysis, geometry and probability. His legacy and profound impact on mathematics will continue to inspire mathematicians for generations to come. We will miss him greatly.

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**Maciej Zworski**, Department of Mathematics, University of California, Berkeley.

Steve Zelditch who passed away on September 9 this year was one of the leaders in global harmonic analysis and microlocal analysis and their applications to spectral geometry. By providing the first available proof of the quantum ergodicity theorem, stated in the Soviet Union by Shnirelman in 1973, and by popularizing and developing that theorem in the West, he started the field of mathematical quantum chaos. He also made profound contributions to complex geometry by applying microlocal methods, in particular results of Boutet de Monvel–Sjöstrand, to the study of Bergman kernel asymptotics for powers of positive line bundles over Kähler manifolds. These asymptotics, now known as Catlin–Tian–Yau–Zelditch, have had many applications since their introduction in 1998.



Figure 6: Steven Zelditch.

One particular direction, was the study of random sections of these line bundles, conducted with many collaborators, especially Shiffman. In spectral geometry one line of research was his collaborations with Sogge and others on the relation between the size of eigenfunctions of the Laplacian and dynamical properties of the geodesic flow. The most recent spectacular result of Zelditch, culminating many years of work and interest, is his theorem with Hezari showing that ellipses sufficiently close to the circle are spectrally determined among domains in the plane (in the sense of the celebrated question “Can you hear the shape of the drum?” We can “hear” ellipses). We have lost a great and charismatic figure in geometric analysis.

Topic #6 ——— OP – SF Net 29.6 ——— November 15, 2022

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 September and October 2022. This list has been separated into two categories.

### **OP–SF Net Subscriber E–Prints**

<http://arxiv.org/abs/2209.01523>  
On the Perturbed Second Painlevé Equation  
Joshua Holroyd, Nalini Joshi

<http://arxiv.org/abs/2209.01787>  
 $A_{348456}(4) = 7157114189$   
Manuel Kauers, Christoph Koutschan, George Spahn

<http://arxiv.org/abs/2209.03399>

An Operational Calculus Generalization of Ramanujan's Master Theorem  
Zachary P. Bradshaw, Christophe Vignat

<http://arxiv.org/abs/2209.03506>

Spectral properties related to generalized complementary Romanovski–Routh polynomials  
Vinay Shukla, A. Swaminathan

<http://arxiv.org/abs/2209.04615>

On classical orthogonal polynomials on lattices and some characterization theorems  
K. Castillo, D. Mbouna, J. Petronilho

<http://arxiv.org/abs/2209.06010>

Moments of Moments of the Characteristic Polynomials of Random Orthogonal and Symplectic Matrices  
Tom Claeys, Johannes Forkel, Jonathan P. Keating

<http://arxiv.org/abs/2209.06745>

Composition–theoretic series in partition theory  
Robert Schneider, Andrew V. Sills

<http://arxiv.org/abs/2209.06765>

Discrete Rearrangements and the Polya–Szegő Inequality on Graphs  
Stefan Steinerberger

<http://arxiv.org/abs/2209.07128>

Differential and Difference Equations for Recurrence Coefficients of Orthogonal Polynomials with a Singularly Perturbed Laguerre–type Weight  
Chao Min, Yuan Cheng, Yang Chen

<http://arxiv.org/abs/2209.07253>

Weak and strong confinement in the Freud random matrix ensemble and gap probabilities  
Tom Claeys, Igor Krasovsky, Oleksandr Minakov

<http://arxiv.org/abs/2209.07433>

$R_I$  biorthogonal polynomials of Hahn type  
Luc Vinet, Meri Zaimi, Alexei Zhedanov

<http://arxiv.org/abs/2209.07713>

The Ariki–Koike algebras and Rogers–Ramanujan type partitions  
Shane Chern, Zhitai Li, Dennis Stanton, Ting Xue, Ae Ja Yee

<http://arxiv.org/abs/2209.07767>

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

<http://arxiv.org/abs/2209.07887>

Error bounds for the asymptotic expansion of the partition function  
Koustav Banerje, Peter Paule, Cristian–Silviu Radu, Carsten Schneider

<http://arxiv.org/abs/2209.07995>

Charting the  $q$ -Askey scheme. II. The  $q$ -Zhedanov scheme

Tom H. Koornwinder

<http://arxiv.org/abs/2209.08186>

Sobolev orthogonal polynomials on the conic surface

Lidia Fernandez, Teresa Perez, Miguel Pinar, Yuan Xu

<http://arxiv.org/abs/2209.08878>

Some elementary aspects of  $q$ -Fibonacci and  $q$ -Lucas polynomials

Johann Cigler

<http://arxiv.org/abs/2209.09213>

Bethe ansatz diagonalization of the Heun–Racah operator

Pierre–Antoine Bernard, Gauvain Carcone, Nicolas Crampe, Luc Vinet

<http://arxiv.org/abs/2209.10515>

Takasaki’s rational fourth Painlevé–Calogero system and geometric regularisability of algebro–Painlevé equations

Galina Filipuk, Alexander Stokes

<http://arxiv.org/abs/2209.10716>

Uniform asymptotic expansions for Gegenbauer polynomials and related functions via differential equations having a simple pole

T. M. Dunster

<http://arxiv.org/abs/2209.10725>

Para–Bannai–Ito polynomials

Jonathan Pelletier, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/2209.10727>

Continuous  $-1$  Hypergeometric Orthogonal Polynomials

Jonathan Pelletier, Luc Vinet, Alexei Zhedanov

<http://arxiv.org/abs/2209.12239>

Unimodality of ranks and a proof of Stanton’s conjecture

Kathrin Bringmann, Siu Hang Man, Larry Rolen

<http://arxiv.org/abs/2209.12353>

New Finite Type Multi–Indexed Orthogonal Polynomials Obtained From State–Adding Darboux Transformations

Satoru Odake

<http://arxiv.org/abs/2209.12658>

Applications of Lipschitz summation formula and a generalization of Raabe’s cosine transform

Atul Dixit, Rahul Kumar

<http://arxiv.org/abs/2209.13472>

Three new identities for the sixth–order mock theta functions

Eric T. Mortenson

<http://arxiv.org/abs/2209.14153>

An inequality characterizing convex domains  
Stefan Steinerberger

<http://arxiv.org/abs/2209.14561>

Phase function methods for second order linear ordinary differential equations with turning points  
James Bremer

<http://arxiv.org/abs/2209.15302>

Enumeration of permutations by the parity of descent position  
Qiongqiong Pan, Jiang Zeng

<http://arxiv.org/abs/2209.15372>

Matrix Jacobi Biorthogonal Polynomials via Riemann–Hilbert problem  
Amílcar Branquinho, Ana Foulquié–Moreno, Assil Fradi, Manuel Mañas

<http://arxiv.org/abs/2209.15495>

The constant term algebra of type  $A$ : the Structure  
Guoce Xin, Chen Zhang, Yue Zhou, Yueming Zhong

<http://arxiv.org/abs/2209.15636>

Does solitary wave solution persist for the long wave equation with small perturbations?  
Hang Zheng, Y–H. Xia

<http://arxiv.org/abs/2210.00082>

Asymptotic analysis of a family of Sobolev orthogonal polynomials related to the generalized Charlier polynomials  
Diego Dominici, Juan José Moreno Balcázar

<http://arxiv.org/abs/2210.00360>

Lower bound for cyclic sums with one–sided maximal averages in denominators  
Sergey Sadov

<http://arxiv.org/abs/2210.00797>

Asymptotics of matrix valued orthogonal polynomials on  $\sim [-1, 1]$   
Alfredo Deaño, Arno B. J. Kuijlaars, Pablo Román

<http://arxiv.org/abs/2210.00977>

Extended commonality of paths and cycles via Schur convexity  
Jang Soo Kim, Joonkyung Lee

<http://arxiv.org/abs/2210.01350>

Partial degeneration of finite gap solutions to the Korteweg–de Vries equation: soliton gas and scattering on elliptic background  
Marco Bertola, Robert Jenkins, Alexander Tovbis

<http://arxiv.org/abs/2210.01949>

On Complex Analytic tools, and the Holomorphic Rotation methods  
Ronald R. Coifman, Jacques Peyrière, Guido Weiss

<http://arxiv.org/abs/2210.02246>

Transmutation Method and Boundary–Value Problems for Singular Elliptic Equations  
Valeriy V. Katrakhov, Sergey M. Sitnik

<http://arxiv.org/abs/2210.03391>

On cellular rational approximations to  $\zeta(5)$

Francis Brown, Wadim Zudilin

<http://arxiv.org/abs/2210.04659>

Finite trigonometric sums arising from Ramanujan's theta functions

Bruce C. Berndt, Sun Kim, Alexandru Zaharescu

<http://arxiv.org/abs/2210.06387>

On intertwining of maxima of sum of translates functions with nonsingular kernels

Bálint Farkas, Béla Nagy, Szilárd Gy. Révész

<http://arxiv.org/abs/2210.07303>

Elliptic finite-band potentials of a non-self-adjoint Dirac operator

Gino Biondini, Xu-Dan Luo, Jeffrey Oregero, Alexander Tovbis

<http://arxiv.org/abs/2210.07614>

Precise asymptotics with log-periodic term in an elementary optimization problem

Sergey Sadov

<http://arxiv.org/abs/2210.08208>

A new type of degenerate poly-Euler polynomials

Yuankui Ma, Taekyun Kim, Hongze Li

<http://arxiv.org/abs/2210.08247>

A sparse spectral method for fractional differential equations in one-spatial dimension

Ioannis P. A. Papadopoulos, Sheehan Olver

<http://arxiv.org/abs/2210.08575>

Laguerre-Freud Equations for three families of hypergeometrical discrete orthogonal polynomials

Itsaso Fernández-Irisarri, Manuel Mañas

<http://arxiv.org/abs/2210.09811>

A Direct Method of Moving Planes for Logarithmic Schrödinger Operator

Rong Zhang, Vishvesh Kumar, Michael Ruzhansky

<http://arxiv.org/abs/2210.10029>

Concentration inequalities for Paley-Wiener spaces

Syed Husain, Friedrich Littmann

<http://arxiv.org/abs/2210.10727>

Bidiagonal factorization of tetradiagonal matrices and Darboux transformations

Amílcar Branquinho, Ana Foulquié-Moreno, Manuel Mañas

<http://arxiv.org/abs/2210.10728>

Positive bidiagonal factorization of tetradiagonal Hessenberg matrices

Amílcar Branquinho, Ana Foulquié-Moreno, Manuel Mañas

<http://arxiv.org/abs/2210.10748>

Identities on Zagier's rank two examples for Nahm's conjecture

Liuquan Wang

<http://arxiv.org/abs/2210.12269>

Variations on the Missionaries and Cannibals Problem  
George Spahn, Doron Zeilberger

<http://arxiv.org/abs/2210.13245>

The AFLT  $q$ -Morris constant term identity  
Yue Zhou

<http://arxiv.org/abs/2210.13469>

Symmetric function generalizations of the  $q$ -Baker-Forrester ex-conjecture and Selberg-type integrals  
Guoce Xin, Yue Zhou

<http://arxiv.org/abs/2210.13731>

Discrete orthogonality of the polynomial sequences in the  $q$ -Askey scheme  
Luis Verde-Star

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Topic #7 ——— OP – SF Net 29.6 ——— November 15, 2022

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 30.1 should be sent by January 1, 2023.

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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](mailto:howard.cohl@nist.gov).

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From: OP–SF Net Editors

Subject: Thought of the Month by **Paul Halmos**

“For a student of mathematics to hear someone talk about mathematics does hardly any more good than for a student of swimming to hear someone talk about swimming. You can’t learn swimming technique by having someone tell you where to put your arms and legs; and you can’t learn to solve problems by having someone tell you to complete the square or to substitute  $\sin u$  for  $y$ .”

**Paul Richard Halmos**, Hungarian–American mathematician (1916–2006), “The Problem of Learning to Teach. I. The teaching of problem solving,” (Halmos, Moise, Piranian), *The American Mathematical Monthly*, May 1975, Vol. 82, No. 5, pp. 466–476.