O P-S F N E T - Volume 32, Number 1 - January 15, 2025

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.

Editors:

Howard S. Cohl howard.cohl@nist.gov
Sarah Post spost@hawaii.edu

Topics:

Calendar of Events:

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

July 2-5, 2025
Third International Conference: Constructive Mathematical Analysis
Selcuk University, Konya, Turkey
https://iccma.selcuk.edu.tr

Topic #1 ——— OP - SF Net 32.1 ——— January 15, 2025

From: Howard Cohl (howard.cohl@nist.gov)
Subject: Message from the Chair

As of January 1st , 2025, a new set of elections were held for SIAG/OPSF and the results of the election are the following elected officers: Chair: Howard Cohl (NIST); Program Director: Kerstin Jordaan (University of South Africa); and Secretary: Tom Trogdon (University of Washington). We would like to thank Bonita Saunders (NIST), everyone in the nominating committee, and everyone who participated in this election! Everyone involved, past and current, shared a collective desire that our OPSF community should continue to thrive and grow.

Figure 1: Howard Cohl.

According to the SIAM website, there are currently only 103 members of our activity group, and this number is down from 185 in January, 2016! But please do not be disheartened by these numbers, according to my records, this Newsletter is distributed to 607 active subscribers. No doubt this discrepancy is due to many factors including the cost of SIAM membership dues. The elected officers hope (and will endeavor) to ameliorate our position. The last few years have been really hard for each and every one of us. Recovery from the global pandemic hasn't been easy, and it's still ongoing, but we persevere.

In 2024, the Universidad de Granada, Spain, hosted OPSFA-17 on June 24-28, which was well-attended and dedicated to the memory of André Ronveaux (1932-2023) and Pascal Maroni (1933-2024). According to the conference website, the meeting was attended by 93 scientists from around the world, hosted 1 invited talk by Paco Marcellán, and 9 plenary talks. It is sad (to say the least) that the Gábor Szegő prize was not awarded at this last OPSFA meeting, as it typically occurs. We have already begun the process to form a selection committee so that the Prize will be awarded at the next OPSFA meeting. Please start thinking about possible nominations for exceptional early career OPSF mathematicians! There will be more discussion on this imminently. Regarding the next 2026 OPSFA-18 meeting, the OPSFA Steering committee is still mulling over options. So we hope that a decision on this should appear in the next Newsletter OPSF-Net 32.2.

Kerstin, Tom and I met yesterday by Zoom at 8.30 am PT (Kerstin in South Africa, 6.30 pm, was ready to wind down for the day). We discussed several topics related to the status of the activity group. The first topic was Kerstin's idea to propose a Gene Golub SIAM summer school in South Africa in connection with the OPSFA summer schools. We anticipate more planning on this topic so please stay tuned.

We also conferred about Kerstin, Tom and my recent efforts to satisfy two rules for the Activity group:

1. Ensure that the SIAM Activity Group is represented at the SIAM Annual Meeting in years where there is no SIAM Activity Group conference;
2. Ensure that at least once every seven years either a track of at least six minisymposia is organized at the SIAM Annual Meeting or the activity group meeting is held jointly with the annual meeting.

This year's SIAM annual meeting is the Third Joint SIAM/CAIMS Annual Meetings happening July 28 – August 1, 2025 in Montréal, Québec, Canada. Kerstin, Tom and I have been actively trying to search for potential organizers for 6+ minisymposia at this meeting in order to satisfy these two rules. A Minisymposium needs only to have four speakers at minimum, so we hope we can satisfy these requirements. The deadline for submitting Minisymposium Proposals is February 10, so if any of you would like to volunteer to co-organize a mini-symposium in beautiful Montréal, that would be great. We've already received exciting responses from a group of mathematicians from around the world, so if you are interested in participating in any way, please contact us and join us.

We look forward to a renewed and stimulating collaboration with SIAM.

Topic #2 ——— OP – SF Net 32.1 ——— January 15, 2025

From: Howard Cohl (howard.cohl@nist.gov) and Sarah Post (spost@hawaii.edu)
Subject: Message from the Editors

Figure 2: Howard Cohl with daughters Ida (15) & Aria (10) in Auckland and Sarah Post with sons Sonny (5) and Julian (2) at the beach in Hawaii.

Greetings all! This is the first Newsletter of the year and we'd like to wish you all a happy and prosperous 2025! As of this year, Sarah and I will have been editing this Newsletter for 9 and 10 years respectively.

It is our hope to continue editing this Newsletter as long as we can. We hope that you all have enjoyed reading it and were able to find some interesting reports, announcements, remembrances, quotes, arXiv articles, and information. Please don't hesitate to contact us if you would like to see something in particular that you haven't seen before, or even just to catch up. We'd love to hear from you.

Topic #3 ——— OP - SF Net 32.1 ——— January 15, 2025

From: Howard Cohl (howard.cohl@nist.gov), Ole Warnaar (o.warnaar@maths.uq.edu.au)
and Nicholas Witte (n.s.witte@protonmail.com)
Subject: Report: Special Functions, q-Series and Beyond in Auckland, NZ by **Cohl**, **Warnaar** & **Witte**

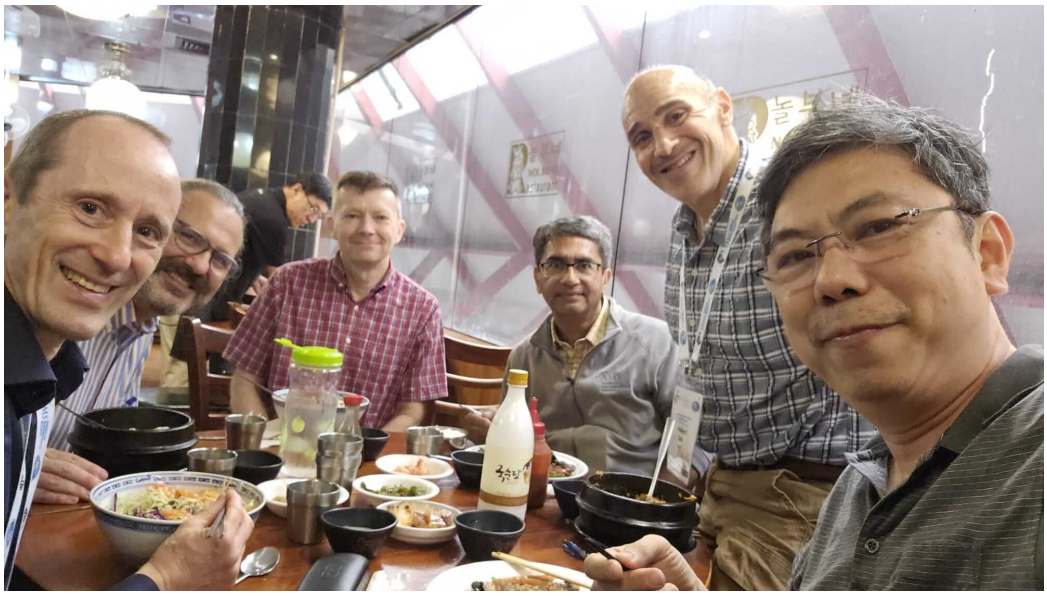

Figure 3: From left-to-right: Ole Warnaar, Michael Schlosser, Shaun Cooper, Gaurav Bhatnagar, Howard Cohl, Heng-Huat Chan. Relaxing and enjoying wonderful conversation and Korean cuisine at Korean Nol Bu Ne Restaurant in City Center, Auckland, New Zealand.

During the week of December 9-13, 2024 a special session entitled "Special Functions, q-Series and Beyond" was held at the University of Auckland, New Zealand as part of the 2024 Joint AMS/NZMS/AustMS meeting. This meeting was extremely popular with more than 885 participants plus 19 guest registered, "New Zealand's biggest maths gathering". This meeting was largest mathematics conference ever held in New Zealand. The meeting had 9 plenary talks plus 41 special and 2 contributed sessions with a total of 748 talks. It was expertly organized by University of Auckland Senior Lecturer, Melissa Tacy, among others including David Bryant (University of Otago). In attendance included Jessica Purcell (AustMS) and Bryna Kra (AMS), Steven Weintraub (AMS) and several other notables including Persi Diaconis (Stanford University). Diaconis gave a public talk on the mathematics of solitaire.

Our special session which was organized by Howard Cohl, Ole Warnaar and Nicholas Witte. We had 6 Keynote speakers (1 hour talks) which included talks by Ae Ja Yee (Penn State), Ken Ono (University of Virginia), Eleanor McSpirit (Vanderbilt), Nalini Joshi (University of Sydney), Ling Long (Louisiana State University) and Greta Panova (University of Southern Califonia). There were also 12 invited half-hour talks. Originally, Sarah Post (University of Hawaii) was going to attend but due to some unforeseen issues, she was unable to speak. In her place, Shashank Kanade (University of Denver), who happened to be in Auckland organizing his own special session, spoke. We were especially lucky to have Ken Ono in attendance of our special session, as he frequently led discussions of finer and far reaching points of interest and

Figure 4: From left-to-right: Eleanor McSpirit, Eleanor's +1, Brandt Kronholm's +1, Brandt Kronholm, Howard Cohl, Ken Ono, Ken Ono's +1. This photo was taken on Wednesday night at the Korean Restaurant Hazy Tiger which blends traditional flavors with modern tapas-inspired dishes. The Deep Fried Corn was especially good.

perspective. For instance, in regard to the stellar talk by AMS Fellow Ling Long, Ono stated in regard to her research group that "*She needs an army!*" because her comprehensive research program concerning hypergeometric functions over finite fields and Galois theory was so overarching. We also got to learn more about Ken's achievements in regard to the Olympics and his efforts to help swimmers rack up world record times using mathematics. One notable attendee of our special session was Shaun Cooper (Massey University). Shaun attended our entire special session and it was wonderful getting to spend time with him discussing mathematics, getting caught up and learning more about Dick Askey.

It was widely held that the overall quality of the talks was exceptional and thoroughly enjoyable. The talks included applications of special functions in number theory, combinatorics, Painlevé transcendents, regular, basic and bilateral, and elliptic and lens elliptic hypergeometric functions, Galois theory, elliptic functions, rook equivalence, vertex models, modular and quasi-modular forms, Diophantine equations, prime numbers, integer partitions. A summary of the talks is as follows:

- Monday: 14:00-14:50 Ae Ja Yee, Partition ranks and cranks from a combinatorial point of view.
- Monday: 15:00-15:25 Michael Schlosser, Rook equivalence and a multisum extension of the Sears ${}_4\phi_3$ transformation.
- Monday: 16:00-16:25 Heng-Huat Chan, Ramanujan's theory of elliptic functions to the cubic base.
- Monday: 16:30-16:55 Jang Soo Kim, Lecture hall graphs and the Askey scheme.
- Tuesday: 11:30-12:20 Ken Ono, q-analogues of multiple zeta functions: Partitions detect prime numbers.
- Tuesday: 14:00-14:50 Eleanor McSpirit, Modularity and Resurgence.
- Tuesday: 15:00-15:25 Shashank Kanade, Remarks on the conjectures of Capparelli, Meurman, Primc and Primc.
- Tuesday: 16:00-16:25 Gaurav Bhatnagar, Expansion formulas for elliptic hypergeometric series.

Figure 5: From left-to-right: Shashank Kanade, Howard Cohl, Greta Panova, Ole Wanaar, Jang Soo Kim, Michael Schlosser and Gaurav Bhatnagar. This photo was taken on early Friday afternoon in front of a beautiful tree in Albert Park near the University of Auckland.

- Tuesday: 16:30–16:55 Pieter Roffelsen, On q-Painlevé VI transcendents, connection problems and Segre surfaces.
- Wednesday: 10:30–11:20 Nalini Joshi, On q-difference Painlevé equations and their Riemann–Hilbert problems.
- Wednesday: 11:30–11:55 Owen Goff, The q-Onsager algebra and the quantum torus.
- Thursday: 11:30–12:20 Ling Long, Hypergeometric Functions and Modular Forms.
- Thursday: 14:00–14:25 Andrei Martínez-Finkelshtein, Hypergeometric Polynomials with Free Probability Tools.
- Thursday 14:30–14:55 Theo Assiotis, Moments of characteristic polynomials of random matrices.
- Thursday: 15:00–15:25 Brandt Kronholm, Formulas for integer partition functions and the usefulness of a forgotten technique.
- Friday: 11:30–12:20 Greta Panova, Hook-length formulas for skew shapes via complex integrals and vertex models.
- Friday: 14:00–14:25 Howard Cohl, Transformations and summations for basic bilateral hypergeometric series.
- Friday 14:30–14:55 Andrew Kels, Lens elliptic gamma function and extensions of elliptic hypergeometric integrals.

From: Andrei Prokhorov (andreip@uchicago.edu) and Pieter Roffelsen (pieter.roffelsen@sydney.edu.au)
Subject: Report: Discrete & Continuous Integrable Systems in Auckland, NZ by **Prokhorov** & **Roffelsen**

The special session on Discrete and Continuous Integrable Systems: Geometry Analysis and Applications was part of the Joint Meeting of the NZMS, AustMS and AMS held in Auckland, New Zealand, December 9–13. The idea of this meeting was to bring together researchers from USA, Australia, and New Zealand. It was organized by Andrei Prokhorov and Pieter Roffelsen. It combined researchers working on discrete and continuous integrable systems, using algebraic and analytic methods. The advertised topics were asymptotic analysis, billiards, differential and difference equations, orthogonal polynomials and random matrix theory, Riemann–Hilbert theory, symmetries and algebro-geometric aspects of integrability, applications. The talks were interesting, engaging, often caused a lot of questions.

The plenary talks were the following: Jan de Gier, University of Melbourne, “Vertex model constructions of symmetric functions and exclusion processes”; Nicholas Witte, Victoria University of Wellington, “The distribution of zeros of the derivative of the Riemann Zeta function via random unitary matrices”; Barbara Prinari, University at Buffalo, “Discrete solitons for the defocusing Ablowitz–Ladik equation with an arbitrarily large background”

The rest of the talks were the following.

- Vladimir Dragovic, University of Texas At Dallas, “Ellipsoidal Billiards, Combinatorics, and Polynomial Pell’s Equations”
- Andrei Prokhorov, University of Chicago and Saint-Petersburg State University, “Asymptotic properties of special function solutions of Painlevé-III equations”
- Andrew Kels, UNSW, “The decomposability property for lattice equations”
- Robert Buckingham, University of Cincinnati, “Asymptotic Behavior of Rational Painlevé-V Functions”
- Andrei Martínez-Finkelshtein, Baylor University and University of Almeria, “Flow of the zeros of polynomials under iterated differentiation”
- Renjie Feng, University of Sydney, “U-statistics for determinantal point processes”
- Tomas Lasic Latimer, UC Santa Cruz, “A discussion on discrete multiple orthogonal polynomial systems”
- Baofeng Feng, University of Texas RGV, “Pfaffian solutions to a coupled complex modified KdV equation and its discrete analogues under nonzero boundary condition”
- Anton Dzhamay, BIMSA, “Discrete Painlevé equations from geometric deautonomization of QRT maps.”
- Yang Shi, Flinders University, “New symmetries of the discrete Painlevé equations from geometric deautonomization of QRT maps”
- Wen-Xiu Ma, University of South Florida, “Nonlocality, integrability and solitons”
- Tom Trogdon, University of Washington, “Applications of Riemann–Hilbert problems with theta-function asymptotics.”
- Alexander Stokes, Waseda University, “Geometry of a four-dimensional multiplicative integrable mapping and associated fourth-order discrete Painlevé equations”
- Eric Zaslow, Northwestern University, “Skeins, Clusters and Wavefunctions”

We would like to mention Deniz Bilman and Roozbeh Gharakhloo, who originally were on the schedule, but couldn't come to the session to deliver their talks.

For lunches some of the members of our group would go to the Old Government House, which has rich history.

Member of our session, Robert Buckingham managed to win the crossword puzzle competition, see Figure 6.

Figure 6: Robert Buckingham won the crossword puzzle competition!

Topic #5 ——— OP – SF Net 32.1 ——— January 15, 2025

From: Oscar Ciaurri (oscar.ciaurri@unirioja.es), Manuel Mañas (mmanasba@ucm.es)
and Francisco Marcellán (pacomarc@ing.uc3m.es)
Subject: Report: ORTHONET Winter 2024 by **Ciaurri**, **Mañas** & **Marcellán**

ORTHONET Winter 2024: V School and VI Meeting

The ORTHONET Winter 2024 event, hosted by the Faculty of Physical Sciences at Universidad Complutense de Madrid, consisted of two complementary activities: the V School and the VI Meeting. These events brought together researchers and students in the fields of orthogonal polynomials, special functions, and related areas.

ORTHONET V School (December 16–19, 2024)

Figure 7: School participants: From left-to-right: First row: Andrei Martínez-Finkelshtein, Walter Van Assche, María Ángeles García Ferrero. Second row: Juan E. F. Díaz, Sergio Díaz Elbal, Angel Alvarez-Paredes, Helder Lima, Juan A. Villegas, Manuel Mañas, Miguel Rojas, Cristina Rodriguez-Perales, Thomas Wolfs, Ana Foulquié, Amílcar Branquinho.

The ORTHONET V School featured three mini-courses delivered by renowned experts:

- Walter Van Assche: "Multiple Orthogonal Polynomials—Theory and Applications"
- Andrei Martínez-Finkelshtein: "Logarithmic Potential Theory"
- María Ángeles García Ferrero: "Exceptional Orthogonal Polynomials and Darboux Transformations"

Each course consisted of four two-hour lectures, resulting in a total of 24 hours of intensive instruction. Sessions included open discussion periods aimed at fostering collaboration and addressing research challenges. The school was attended by nine participants, creating an engaging and interactive environment. The discussions were animated, with active exchanges of ideas and perspectives, making it a valuable learning experience for all.

ORTHONET VI Meeting (December 19–20, 2024)

The ORTHONET VI Meeting provided a platform for researchers in order to share their latest findings and discuss ongoing projects. The program included three plenary lectures:

- "Luis Vigil Lecture" by Andrei Martínez-Finkelshtein
- Plenary lecture by Alberto Enciso
- Closing plenary lecture, "Orthogonality and Applications," by Walter Van Assche

There was also invited talks by senior researchers, including María José Cantero, Ramón Orive, Antonio J. Durán, and Juan Luis Varona; junior talks by early-career researchers, such as Juan E. F. Díaz and Juan

Figure 8: Meeting participants. From left-to-right: Antonio J. Durán,Amílcar Branquinho, Ana Foulquié, Maria. J. Cantero, Miguel Piñar, Walter Van Assche, Teresa Pérez, Ramón Orive, Mirta Castro, Chelo Ferreira, Lidia Fernández, Raquel Gonzalo, Manuel Mañas,Carmen Escribano, Helder Lima, Esther Pérez-Sinusia, J. A. Villegas,Sergio Díaz Elbal, Miguel Rojas, Juan E. F. Díaz; First row: Andrei Martínez-Finkelshtein, Juan Luis Varona, Antonia Delgado, Juan J. Moreno-Balcázar.

Antonio Villegas; and contributed talks and a poster session, providing an opportunity for active participation and dialogue.

Gatherings of the ORTHONET community, with a Principal Investigators meeting and an assembly to promote collaboration and set future objectives were also included. Like the school, the meeting fostered animated discussions and exchanges of viewpoints, enriching the academic experience and strengthening the research community.

A Successful Event

The ORTHONET Winter 2024 was a resounding success in terms of participation and engagement. Combining 18 hours of lectures with interactive discussions, contributed sessions, and structured meetings, the event provided an excellent environment for knowledge exchange and academic networking. Both the school and the meeting were marked by a high level of enthusiasm and collaboration, underlining the vibrancy of the ORTHONET community.

The ORTHONET Winter 2024 Organizing Committee:
Oscar Ciaurri (Universidad de la Rioja),
Manuel Mañas (Universidad Complutense de Madrid) and,
Francisco Marcellán (Universidad Carlos III de Madrid).

From: Gaurav Bhatnagar (bhatnagarg@gmail.com), Atul Dixit (adixit@iitgn.ac.in)
and Krishnan Rajkumar (krishnan.rjkmr@gmail.com)
Subject: 2024 Report: "Topics in Special Functions & Number Theory" by **Bhatnagar**, **Dixit** & **Rajkumar**

Seminar on "Topics in Special Functions and Number Theory": Annual Report 2024

This is a report on the seminar on "Topics in Special Functions and Number Theory", organized by Gaurav Bhatnagar (Ashoka University), Atul Dixit (IIT, Gandhinagar) and Krishnan Rajkumar (JNU). We meet approximately once every other week. The current timing is Thursdays, 4:00 - 5:00 PM (IST), though on occasion we deviate as per the speaker's convenience. In case you wish to be informed of future talks, please drop a line to the organizers at sfandnt@gmail.com. The talks in the year 2024 (listed below) are all available on our website https://www.sfnt.org. We welcome suggestions for talks.

The first talk of this year (on February 6, 2025) is a "Ramanujan Special".
The speaker is Krishnaswami Alladi.

Talk Announcement: Ramanujan Special 2025
Speaker: Krishnaswami Alladi (University of Florida, USA)
Title: Duality between prime factors and primes in arithmetic progressions
When: Thursday, February 6, 2025, 6:30 PM- 7:30 PM IST (8 AM EST) (Note special time)
Where: Zoom: Please write to sfandnt@gmail.com for the link

Talks in 2024

The following talks were presented during the Seminar in 2024.
All talks are available at: https://www.sfnt.org.

Ramanujan Special 2024: Frank Garvan (University of Florida, USA):
Title: Identities for Ramanujan's Mock Theta Functions and Dyson's Rank Function

In addition, the following speakers gave talks. These are (in alphabetic order by last name):

1. George Andrews (Penn State University): Extensions of MacMahon's Generalization of Sums of Divisors
2. Arvind Ayyer (IISc, Bangalore): A new combinatorial formula for the modified Macdonald polynomials.
3. Gaurav Bhatnagar (Ashoka University): Elliptic enumeration and identities
4. Shashank Chorge (IIT, Gandhinagar): Voronoi summation formulas for certain arithmetic functions and related identities and omega bounds on error terms
5. Shivani Goel (IIIT, Delhi): Distribution and applications of Ramanujan sums
6. Jeremy Lovejoy (CNRS, Paris): Bailey pairs, radial limits of q-hypergeometric false theta functions, and a conjecture of Hikami
7. Alexandru Pascadi (Mathematical Institute, University of Oxford): The dispersion method and beyond: from primes to exceptional Maass forms
8. Pedro Ribeiro (University of Porto, Portugal): Generalizations (in the spirit of Koshliakov) of some formulas from Ramanujan's Lost Notebook
9. Hjalmar Rosengren (Chalmers University of Technology and University of Gothenburg): String amplitudes and partial fractions: A mathematician's perspective
10. Aninda Sinha (Indian Institute of Science, Bangalore): Field theory expansions of string theory amplitudes

Ramanujan Explained

We have launched a course under the title of *Ramanujan Explained*. There will be a series of lectures, given by Gaurav Bhatnagar, with accompanying notes and exercises. The goal is to cover (a large number of) Ramanujan's identities. Please share this announcement with students who may be interested in Ramanujan and his mathematics.

The first few lectures will target q-hypergeometric series and special cases, and can serve as an introduction to basic hypergeometric series. We hope these lectures will serve as a useful supplement to the monumental work of Bruce Berndt (Ramanujan's Notebooks I–V) and George Andrews and Bruce Berndt (Ramanujan's Lost Notebook I–V).

In 2024, six lectures were presented, covering about 50 identities of Ramanujan. All of these, with accompanying notes, are available at https://ramanujanexplained.org.

Topic #7 ——— OP - SF Net 32.1 ——— January 15, 2025

From: OP-SF Net Editors
Subject: Remembrances of **Ruiming Zhang** (1964-2024)

Remembrances of Ruiming Zhang (September 15, 1964—September 24, 2024)

Below are three remembrances of Ruiming Zhang from some of his colleagues:

Zhi-Guo Liu & Xinrong Ma; **Gang Li**; and **Mourad E. H. Ismail**.

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Memories of Ruiming Zhang

Zhi-Guo Liu (zgliu@math.ecnu.edu.cn) and Xinrong Ma (xrma@suda.edu.cn)

Ruiming Zhang, died on 24 September 2024, aged 61. He held Canadian citizenship. When he passed away, he was a professor at Guilin University of Electronic Science and Technology. Ruiming was born in Boxing County, Shandong Province in 1964 and graduated from Ocean University of China with a Bachelor's degree in 1983. He graduated with a Ph.D. from the University of South Florida in 1993, under the supervision of Mourad E. H. Ismail. His main research interests were orthogonal polynomials, special functions, and asymptotic analysis.

Ruiming was a talented mathematician, who has done many important results in special functions and asymmetric analysis. He has published a total of 46 valuable research papers. He worked as a postdoctoral fellow at the University of Toronto and York University in Canada from 1993 to 1996. He worked as a software engineer in three different companies in Canada from 1996 to 2003. After returning to China from Canada in 2003, he worked successively at Guangxi Normal University and Northwest A&F University and he joined Guilin University of Electronic Science and Technology in 2019. He had been awarded the National Natural Science Foundation of China three times. Ruiming and his doctoral supervisor Ismail held the Summer Research Institute on q-Series at Nankai University from July 25th to August 15th , 2018. Ruiming was a kind person who had helped many young Chinese experts in special functions. We miss Ruiming very much!

Zhiguo Liu, Department of Mathematics, East China Normal University, Shanghai, China
Xinrong Ma, Department of Mathematics, Soochow University, Suzhou, Jiangsu, China

Figure 9: Ruiming giving a lecture at Hangzhou Normal University on November 11, 2023.

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In Memory of Dr. Ruiming Zhang

Gang Li (vli@ucla.edu)

It is with deep sorrow that we remember Dr. Ruiming Zhang, a brilliant mind and a cherished friend, who passed away on September 24, 2024. Born in 1964 as the youngest of seven (or possibly eight) siblings in a rural family, Ruiming grew up with limited resources but possessed an extraordinary gift for mathematics. Despite facing many challenges, he passed China's most competitive college entrance exams and became a college student in 1979 at just 15 years old, majoring in Applied Mathematics at the Ocean University of China. In 1985, he was among the few selected to study in the United States through a scholarship sponsored by the World Bank Organization. He received his Ph.D. degree in Mathematics from the University of South Florida under the supervision of Dr. Mourad Ismail.

Ruiming is remembered by his friends and colleagues as a brilliant mathematician whose unwavering passion for mathematics remained steadfast throughout his life. He had a deep passion for solving complex problems, always pushing himself to tackle the hardest questions and searching for simpler, more elegant ways to prove theorems and conjectures. His dedication wasn't driven by external recognition but by a pure and genuine curiosity. As his close friend, I will never forget how excited Ruiming

Figure 10: Ruiming Zhang at his college graduation (third from the left in the top row); Photo contributed by Ming Liu.

would become when he believed he had solved a difficult problem or discovered a new proof. His eyes would light up with excitement as he exclaimed, “Hey Gang, I found a new solution to this problem!” He could hardly wait to share his idea, his voice brimming with joy as if he had just uncovered an entirely new world. That pure, unfiltered enthusiasm—that childlike sense of wonder—truly defined who Ruiming was.

Ruiming was also one of the kindest and most generous people I have ever known. He was deeply honest and compassionate to those who knew him. I still vividly remember the day in when he encouraged me through a letter to apply for a scholarship to study in the United States. When I was accepted, he helped me buy my plane ticket, arranged my housing, and did everything he could to support my transition. His quiet generosity and selfless actions profoundly shaped my life and career.

Ruiming’s legacy lives on not just through his intellectual pursuits, but through his honesty, kindness, and the deep friendships he nurtured. His love for learning and his unwavering support for those he cared about will never be forgotten.

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Ruiming Zhang, My best Student and Friend

Mourad E. H. Ismail (mourad.eh.ismail@gmail.com)

I first met Ruiming Zhang when he came to Arizona State University from China. This was around 1984 when China started sending students to the USA. He was very impressive. His English was minimal but he had a way of communicating his ideas. We got along well from the start. I invited Martin Muldoon for a talk and Ruiming went to the talk which was on the Hellman–Feynman theorem. Zhang immediately started working on it. There was no rigorous proof known at the time and Ruiming found one. This made his Master's thesis. In his thesis defence one member told the others that with a little more work this can be a Ph.D. thesis. I never told this to Ruiming because I expected more from him. I moved to the University of South Florida and he moved with me.

After graduation Ruiming worked on several projects. He also got interested in computing and even worked as a software engineer and was involved in the program for the Toronto Stock Exchange. When he went back to academia he taught mathematics and computer science courses.

Ruiming research involved spectral analysis of certain integral operators, evaluations of sums and integrals, combinatorial identities and numbers, asymptotics, and monotonicity of special functions.

Ruiming was a very original and independent thinker and I was very fortunate to have known and worked with him. He was very special.

Topic #8 ——— OP – SF Net 32.1 ——— January 15, 2025

From: OP–SF Net Editors
Subject: Remembrances of **Masatoshi Noumi** (1955–2024)

Remembrances of Masatoshi Noumi (March 11, 1955—November 20, 2024)

Below are two remembrances of Masatoshi Noumi from some of his colleagues:

Katsuhisa Mimachi; and **Sergei Suslov**.

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Masatoshi Noumi

Katsuhisa Mimachi (mimachi@math.sci.osaka-u.ac.jp)

Masatoshi Noumi was a Professor of Rikkyo University (Tokyo, from 2022) and a Professor Emeritus of Kobe University (Kobe). His research interests were algebraic analysis of integrable systems, representation theory and special functions, in particular, quantum symmetric spaces and their spherical functions, Lie theoretic approach to differential/difference equations of Painlevé type, and, elliptic hypergeometric functions and elliptic integrable systems. He passed away on Nov. 20, 2024 after some time of illness. He was born on March 11, 1955.

Figure 11: Masatoshi Noumi.

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Masatoshi NOUMI

Sergei Suslov (sergei@asu.edu)

Sad news: https://link.springer.com/journal/11040/updates/27723324
about the death of the distinguished Japanese mathematician, Professor Masatoshi Noumi:
https://www.math.kobe-u.ac.jp/HOME/noumi/
has reached our community.

My first memory of Masatoshi is from the early 1990's, the early developments of quantum groups, at the beginning of his distinguished career. We met for the first time at the Euler International Institute in Leningrad, nowadays Saint Petersburg. Ludwig Faddeev was the creator and director of this new institute. Conferences and visitors from abroad were among one of the main activities. Euler's name was the symbol of European and international scientific cooperation. One of these meetings was a workshop dedicated to development of quantum groups and related topics. Among the participants were Lawrence Biedenharn, Yuri Smirnov, Anatol Kirillov along with a young and energetic participant from Japan, Noumi. English was the working language at the meeting but my talk on biorthogonal rational functions was scheduled on a late evening session and only Soviet participants were in the room. So, they asked me to speak in Russian. In the end of the presentation, I realized that Masatoshi is standing at the door. When I asked him why he didn't say anything, he just replied that he didn't want to interrupt my presentation. I will always remember Masatoshi, as that young energetic man, from the early beginning of his distinguished career.

From: OP-SF Net Editors
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Davide Fioravanti, Marco Rossi

Topic #10 ——— OP - SF Net 32.1 ——— January 15, 2025

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 32.2 should be sent by March 1, 2025.

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 (2025-2027) are:

Howard Cohl, Chair
Kerstin Jordaan, Program Director
Tom Trogdon, Secretary

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

Topic #11 ——— OP - SF Net 32.1 ——— January 15, 2025

From: OP-SF Net Editors
Subject: Thought of the Month by **Askey**

"Part of the secret of success in studying and using special functions is to try to remember exactly what is necessary, and nothing more."

Richard Askey (1933-2019), *Orthogonal Polynomials and Special Functions*, Society for Industrial and Applied Mathematics, Philadelphia, 1975, p. 9.

Contributed by **Paul A. Martin**.