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

http://math.nist.gov/opsf

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Topics:

Calendar of Events:

March 16-20, 2020
IV ORTHONET School
Universidad de la Rioja, Logroño, Spain
http://euler.us.es/ orthonet/orthonet20

March 21-22, 2020
AMS Spring Eastern Sectional Meeting
Special Session on "Quantum Probability, Orthogonal Polynomials, and Special Functions"
Tufts University, Medford, Massachusetts, USA
http://www.ams.org/meetings/sectional/2275_program.html

April 27-May 1, 2020
Workshop on Integrable Systems and Orthogonal Polynomials—Numerical and Analytical Perspectives
AIMS South Africa, Muizenberg, Cape Town, South Africa
https://aims.ac.za/2019/10/23/workshop-integrable-systems-and-orthogonal-polynomials-numerical-and-analytical-perspectives/

May 11–15, 2020
LMS–CMI Research School: *Methods for Random Matrix Theory and Applications*
University of Reading, Reading, UK
https://janivirtanen.wordpress.com/research-school-2020

May 18–22, 2020
Baylor Analysis Fest: *From Operator Theory to Orthogonal Polynomials, Combinatorics, and Number Theory*
Baylor University, Waco, Texas, USA
https://www.baylor.edu/math/conference

June 15–24, 2020
Foundations of Computational Mathematics (FoCM2020)
Workshop on Approximation Theory, June 18–20
Organized by Albert Cohen, Peter Binev and Maria Charina
Workshop on Random Matrices, June 18–20
Organized by Ionna Dumitriu and Sheehan Olver
Workshop on Special Functions and Orthogonal Polynomials, June 22–24
Organized by Ana Loureiro, Francisco Marcellán and Andrei Martínez Finkelshtein
Simon Fraser University, Vancouver, Canada
http://focm-society.org/2020/index.html

July 5–11, 2020
8th European Congress of Mathematics (8ECM)
Mini-symposium on Orthogonal Polynomials and Special Functions
Organized by Paco Marcellán, Juan J. Moreno-Balcázar and Galina Filipuk,
Portorož, Slovenia
https://www.8ecm.si/minisymposia

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

July 7–10, 2020
Functional Analysis, Approximation Theory and Numerical Analysis (FAATNA)
Matera, Italy
http://web.unibas.it/faatna20/

July 13–17, 2020
33rd International Colloquium on Group Theoretical Methods in Physics (Group33)
Cotonou, Benin
http://www.cipma.net/group33-cotonou-benin

July 13–18, 2020
Combinatorics around the q-Onsager algebra, celebrating the 65th birthday of Paul Terwilliger
Satellite event of the 8th European Congress of Mathematics
which will be held the prior week in Portorož, Slovenia,
Kranjska Gora, Slovenia
https://conferences.famnit.upr.si/indico/event/15/overview

August 10–14, 2020
OPSFA Summer School 2020
Radboud University, Nijmegen, The Netherlands
https://www.ru.nl/radboudsummerschool/courses/2020/opsfa-summer-school-2020

Topic #1 ——— OP – SF Net 27.1 ——— January 15, 2020

From: OP–SF Net Editors
Subject: Announcement: SIAG–OPSF election results

Nicole Gawel, Membership Coordinator of SIAM, has informed us of the results of the election for the offices of the SIAM Activity Group "Orthogonal Polynomials and Special Functions".

Elected Name	Position	E-mail Address
Peter Alan Clarkson	Chair	P.A.Clarkson@kent.ac.uk
Luc Vinet	Vice–Chair	luc.vinet@umontreal.ca
Andrei Martínez–Finkelshtein	Program Director	andrei@ual.es
Teresa E. Pérez	Secretary	tperez@ugr.es

In the words of Nicole Gawel, "*Congratulations to those elected! Thank you to all candidates for their commitment to SIAG/OPSF, and thank you to all who voted!*". The term of the elected officers started January 1, 2020 and runs until December 31, 2022.

Many thanks to the service of the outstanding outgoing officers! Walter Van Assche and Yuan Xu served respectively as Chair and Secretary of the activity group from 2014–2019. Andrei Martínez–Finkelshtein served as Vice Chair from 2017–2019 (and will now serve as Program Director from 2020–2022). Sarah Post served as Program director from 2017–2019.

We are deeply indebted and greatly appreciative to Walter Van Assche for all the hard work, advice and support that he has given us over the time we have been OP–SF NET co–editors. In our regular activities, we will miss his light wit, his ever–present sense of humor and his talent of being able to drill directly to the main point of any topic which we faced when we needed assistance. It's been an honor to have worked with him.

Topic #2 ——— OP – SF Net 27.1 ——— January 15, 2020

From: Andrei Martínez–Finkelshtein (A_Martinez–Finkelshtein@baylor.edu)
and Fritz Gesztesy (Fritz_Gesztesy@baylor.edu)
Subject: Announcement: *Baylor Analysis Fest* at Baylor University, Waco, Texas, USA

The international conference "*Baylor Analysis Fest: From Operator Theory to Orthogonal Polynomials, Combinatorics, and Number Theory*" will take place at Baylor University (Waco, Texas, USA), on May 18–22, 2020. It is organized around topics of Analysis such as Operator and Spectral Theory, Special Functions and Orthogonal Polynomials, and their connections with Combinatorics, Probability Theory, and Number Theory. It will also celebrate Lance L. Littlejohn's accomplishments in building the Mathematics Department at Baylor University for well over a decade now.

Plenary Speakers:

- George E. Andrews (Pennsylvania State University);

- David Damanik (Rice University);
- Lance L. Littlejohn (Baylor University);
- Ken Ono (University of Virginia);
- Barry Simon (California Institute of Technology).

The local local Organizing Committee is comprised of Fritz Gesztesy and Andrei Martínez-Finkelshtein.

For further details, visit https://www.baylor.edu/math/conference.

Topic #3 ——— OP - SF Net 27.1 ——— January 15, 2020

Proceedings of the School and Conference held at Będlewo, Poland, September 2–15, 2018.
From: Galina Filipuk (filipuk@mimuw.edu.pl)

Subject: Announcement: CDDE–2018, Będlewo, Poland Proceedings

We would like to draw your attention to the following proceedings:

Będlewo CDDE–2018: *Complex Differential and Difference Equations*

Proceedings of the School and Conference held at Będlewo, Poland, September 2–15, 2018.
Edited by Galina Filipuk, Alberto Lastra, Sławomir Michalik, Yoshitsugu Takei and Henryk Żołądek.
Series: De Gruyter Proceedings in Mathematics.

This collection contains many articles on relevant topics that may interest OPSF members including symmetries of hypergeometric functions, special function solutions used in WKB analysis, Painlevé transcendents and solutions of q–difference equations.

Aims and Scope: With a balanced combination of longer survey articles and shorter, peer-reviewed research-level presentations on the topic of differential and difference equations on the complex domain, this edited volume presents an up-to-date overview of areas such as WKB analysis, summability, resurgence, formal solutions, integrability, and several algebraic aspects of differential and difference equations.

https://www.degruyter.com/view/product/506612.

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Part II

Topic #4 ——— OP - SF Net 27.1 ——— January 15, 2020

From: Ted Chihara (chihara@pnw.edu), Werner Scheinhardt (w.r.w.scheinhardt@utwente.nl), Frank Coolen (frank.coolen@durham.ac.uk), Lance L. Littlejohn (Lance_Littlejohn@baylor.edu) and Paco Marcellán (pacomarc@ing.uc3m.es)
Subject: Some remembrances (five) of **Erik A. van Doorn**

Some remembrances of Erik van Doorn (August 12, 1949—November 1, 2019)

by Chihara, Scheinhardt, Coolen, Littlejohn and Marcellán

An obituary of Erik van Doorn appeared in OP-SF Net 26.6, published on November 15, 2019. Below are remembrances of Erik from five of his colleagues and friends, Ted Chihara, Werner Scheinhardt, Frank Coolen, Lance L. Littlejohn and Paco Marcellán.

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Ted Chihara, Purdue University Northwest, Hammond, Indiana, USA.

My first contact with Erik occurred in the form of a letter from him dated October 1982. He had sent me a copy of his thesis written in 1979 at Twente University of Technology. This thesis, titled ["*Stochastic Monotonicity of Birth-Death Processes*", Advances in Applied Probability, **12**:1, 59–80, 1980], was subsequently published in a "polished" form as Vol. 4 in the Springer-Verlag Lecture Notes in Statistics ["*Stochastic monotonicity and queueing applications of birth-death processes*", Lecture Notes in Statistics, **4**, Springer-Verlag, New York-Berlin, vi+118 pp., 1981]. In his accompanying letter, he said that at the time he wrote his thesis, he was not aware of the literature on orthogonal polynomials apart from the classic books. And he went on to say that at the time, he did not think of "orthogonal polynomials" as a key phrase. He added that he later read a paper by Jesus Dehesa which had both "orthogonal polynomials" and "birth-death processes" in its title and through it discovered my book. I first met Erik at the conference "Constructive Function Theory-86" held in Edmonton, Alberta in July of 1986. Interestingly, Erik presented a paper on the zeros of orthogonal polynomials whereas I read a paper on the spectra of certain birth-death processes.

As we all know, Erik continued with his interest in OP and as well as with his work on birth-death processes and my next contact with him took place at the OPSFA 3 meeting in Erice, Sicily in 1990 where I also met his charming wife, Janny. Erik's paper at this conference was on a class of generalized orthogonal polynomials.

One chapter of his thesis was devoted to queueing processes where potential customers are discouraged by queue length. Here and in a later paper ["*The transient state probabilities for a queueing model where potential customers are discouraged by queue length*", Journal of Applied Probability, **18**:2, 499–506, 1981], he succeeded in finding explicitly the spectral function of the process so he has the orthogonality relations for the corresponding orthogonal polynomials, the van Doorn polynomials. His results suggested a characterization problem which led Mourad Ismail and me to a generalization ["*Orthogonal polynomials suggested by a queueing model*", Advances in Applied Mathematics **3**:4, 441–462, 1982] of the van Doorn polynomials. Thus, Erik's work has proven fruitful to progress in the study of orthogonal polynomials as well as providing much needed further applications. I am grateful that his work has led me to write a few papers on birth-death processes so I can say I have done a little applied mathematics.

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Werner Scheinhardt, University of Twente, Enschede, The Netherlands.

Erik had an interest in birth-death processes and random walks due to his passion for orthogonal polynomials, as discussed by Ted Chihara, but he also worked on other topics in stochastic processes, such as convergence of Markov chains and quasi-stationary distributions, to be addressed by Frank Coolen (husband of the late Pauline Schrijner, who worked with Erik on these

topics). It was doing my graduation project on convergence of Markov chains under Erik's encouraging and supportive guidance that made me decide to pursue a scientific career.

Another area to which Erik contributed was stochastic fluid queues, generalizing the foundational Anick-Mitra-Sondhi model, first allowing the modulating process to be any finite birth-death process ["*A fluid reservoir regulated by a birth-death process*", Erik A. van Doorn, A. A. Jagers and J. S. J. de Wit, Communications in Statistics. Stochastic Models, **4**:3, 457–472, 1988], and later allowing it to have infinitely many states, and also to let its evolution be influenced by the queue content. The latter results were part of the PhD project I did under Erik's supervision, which resulted in the thesis ["*Markov-modulated and feedback fluid queues*", Willem Richard Werner Scheinhardt, University of Twente, 155 pp., 1998]. I am thankful for the memories of working with Erik and others on these topics, and of joining him (and Janny!) to visit several Matrix-Analytic Methods conferences. Only later it was recognized in this community that fluid queues can be analyzed in greater generality using matrix-geometric techniques; however much credit for the early developments is due to Erik.

By no means were Erik's interests limited to the areas mentioned above. To mention two of his 'ad hoc', but nevertheless influential, papers: together with Jagers, he wrote ["*On the continued Erlang loss function*", with Jagers, A. A., Operations Research Letters, **5**:1, 43–46, 1986], in which conjectured and unknown properties were proven for the so well-known and widely applied formula for the 'blocking probability' in finite-server systems without queueing. And, with Regterschot, he generalized the well-known PASTA property of queueing theory (acronym for Poisson Arrivals See Time Averages) to the context of a random environment ["*Conditional PASTA*", Erik A. van Doorn and G. J. K. Regterschot, Operations Research Letters, **7**:4, 229–232, 1988].

Erik van Doorn was a versatile mathematician, and I feel privileged that he was the one who first taught me probability, stochastic processes and queueing, then taught me how to do research, and finally helped me find my own way, while always being available for good advice when needed. He has always been a great support and will continue to be an inspiring example of how research can be done in a meaningful and pleasant way.

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Frank Coolen, Durham University, Durham, United Kingdom.

Erik published the paper ["*Quasi-Stationary Distributions and Convergence to Quasi-Stationarity of Birth-Death Processes*", Advances in Applied Probability, **23**:4, 683–700, 1991]. In this highly cited paper, he presented three key results: The set of quasi-stationary distributions for birth-death processes, the quasi-limiting distribution for the state of such processes, and the rate of convergence of the transition probabilities of the process conditioned on non-absorption. This work considered processes in continuous time. Together with his PhD student Pauline Schrijner (after our marriage, Coolen-Schrijner), Erik also developed the corresponding theory for discrete-time processes, resulting in Pauline's PhD thesis ["*Quasi-Stationarity of Discrete-Time Markov Chains*", The University of Twente, 105 pp., 1995], and several related journal publications. The collaboration between Erik and Pauline continued after Pauline had moved to Durham University, leading to several research visits by Erik to North-East England, resulting in further scientific outputs and many pleasant trips, during which Erik provided us with much information about the area. A highlight was a visit to Chester Fort Museum on Hadrian's Wall, where stones contain the first reference to the Tuihanti, the Latin name for the people from Twente.

The collaboration with Pauline also resulted in a further much-cited paper ["*The Deviation Matrix of a Continuous-Time Markov Chain*", Pauline Coolen-Schrijner and Erik A. van Doorn, Probability in the Engineering and Informational Sciences, **16**:3, 361–366, 2002]. The many contributions by

Erik on quasi-stationarity, together with related work by many other researchers, partly built on the foundations laid by Erik, are described in an overview paper written together with his regular collaborator and friend Phil Pollett ["*Quasi-Stationary Distributions for Discrete-State Models*", Erik A. van Doorn and Philip K. Pollett, European Journal of Operational Research, **230**:1, 1–14, 2013]. While I have never personally collaborated with Erik, we regularly discussed topics of joint interest, in particular during his visits to Durham, which also continued after Pauline's untimely death in 2008.

Erik had a wide interest in topics in Probability and related fields, and often provided useful input into discussions on topics which were quite far from his own research. A particularly nice memory I have of Erik is his explanation to us, when the mathematical contents of a research project with Pauline had been completed, that 'now the really nice work' started, namely the writing of the paper. Erik enjoyed this and explained that he first carefully thought about the overall structure of the paper. This was followed by detailed consideration of the order and contents of the paragraphs, then the sentences and, finally, the words. He would then leave the paper for a few days, return to it for some final tweaking, after which he asked Pauline if she thought the paper was ready for submission to a journal, which of course it was (and had been for some time in the eyes of most!).

Erik gave similar care to his presentations, which one could largely follow even without being a topic expert. Such care of presenting his scientific work, together with the quality of his contributions, makes Erik an example to us all. Far beyond this, Erik was a caring person with a great sense of humor, who will be missed by all who had the pleasure to know him.

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Lance L. Littlejohn, Baylor University, Waco, Texas, USA.

Like Ted Chihara, I first met Erik at the Constructive Function Meeting in Edmonton in 1986. He was staying in a dorm room next to mine and we happened to meet one evening outside our rooms. This was the start of a wonderful friendship with Erik, and a little later, with his delightful wife, Janny. For me, personally, it was great fun every two years to meet up with Erik, Janny and Ted at the OPSFA meetings.

In the fall of 1990, I started a year-long sabbatical leave at the University of Wales in Cardiff when I was invited to be a member of the committee for the Ph.D. defense of Roelof Koekoek at Delft University. After that trip, the three Littlejohns visited the van Doorns in Enschede. Oh, what a visit we had! Erik and Janny had planned a wonderful visit for us; among several other places we went, we visited a wooden shoe factory (I still wear mine when working in the garden!) and our four-year old son had a memorable visit with Sinterklaas. Erik had recently returned from a mathematical trip to East Germany. He brought his young son Tim a real cross bow. If I am recalling this incident correctly, an errant arrow knocked out one of their windows!

Erik and Janny visited us in Logan, Utah and Waco, Texas. So much fun each time for the four of us! Janny is an extraordinarily gifted oil and water painter and a talented potter and sculptor as well. Wendy and I recently counted the number of art pieces that Janny has made for us over the years: eight. We proudly have each of them displayed throughout our home. She made a ninth piece of pottery recently for our new granddaughter.

Similar to Frank Coolen's comment, Erik and I never collaborated on any research projects. We both viewed the subject of orthogonal polynomials more as a hobby as we pursued research in different areas which had orthogonal polynomials as applications to our work.

We have lost both a wonderful friend and an accomplished mathematician. I counted Erik as one of my truly close and dear friends.

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Paco Marcellán, Universidad Carlos III de Madrid, Madrid, Spain.

On October 31 of last year, Lance L. Littlejohn sent me the following email "*Today, I received a very sad phone call from Janny van Doorn who told me that her husband, Erik, was killed riding his bicycle yesterday. Janny wanted me to inform the orthogonal polynomials group that they both knew and loved for many, many years*". I was saddened by the bad news during this Fall semester (the death of Martin Muldoon and Dick Askey, among those who were closest to me.)

I met Erik in Segovia, Spain, in September 1986 on the occasion of the OPSFA meeting, the second one in the series which started in Bar-Le-Duc, France, in 1984. I was one of the organizers of that meeting with Manuel Alfaro, Jesús S. Dehesa, Jaime Vinuesa and José Luis Rubio de Francia (one of the top Spanish mathematicians who sadly died at the age of 38 in 1988). For me it was a great opportunity to meet people from several different countries in Europe, and as well from the former Soviet Union and from America (among them a young Lance L. Littlejohn who became a very good friend of mine as well as Erik's). In a period when mathematical connections were mainly supported by mail and using the journals as a basic way, scientific meetings were the right place to show the face of people whose work was related to my scientific interests. I think it was a nice and successful meeting where we shared not only mathematics, but had the honor to stay in one of the most beautiful cities in Spain.

The study of stochastic process has been the main research interest of Erik's. His doctoral dissertation on stochastic monotonicity of Birth and Death processes, defended in Twente University in 1980 under the supervision of J. A. H. de Smit (his name is missed in the Mathematics Genealogy project) was the starting point of a very successful career covering topics including birth-death processes and random walks with applications to orthogonal polynomials. He was also involved in many other areas of stochastic processes, including some relevant contributions in quasi-stationary distributions, convergence of Markov chains and stochastic fluid queues.

Erik was a real gentleman as well as an excellent mathematician. I asked his advice about a joint paper with Gerardo Pérez, a student of mine, on *The moments of the* $M/M/s$ *queue length process*. He suggested many improvements to us for our presentation and also considerations for the right journal (Queueing Systems: Theory and Applications) in order to submit it. Indeed, it was published therein in 2003.

His work on orthogonal polynomials combines a good expertise on classical topics (zeros, spectral properties, asymptotics) together with motivation from stochastic processes. I would like to point out that the last paper by Erik available in MathSciNet is a joint work with R. Szwarc, "*On a property of random walk polynomials involving Christoffel functions*", J. Math. Anal. Appl, **477**:1 (2019), pp. 85–103. By using Christoffel functions for a type of orthogonal polynomials known as a random walk *polynomials*, they proved the equivalence of asymptotic aperiodicity and the strong ratio limit property for a normalized birth-death process under mild regularity conditions.

Last but not least, as a universal constant, in all pictures when I am appear with Erik, also appears Ted Chihara and Janny, Erik's wonderful wife. As a sample, enclosed I show a picture where people of our community of orthogonal polynomials and special functions can be "*easily*" identified (around 1990).The exercise I suggest to the readers of this remembrance is where the picnic took place. (The solution is given in the next page).

Photograph taken at the Third International Symposium on Orthogonal Polynomials and their Applications (OPSFA-3) in Erice, Sicily, Italy, May 31–June 9, 1990.
l to r: Ted Chihara, Janny van Doorn (Erik's wife), Erik van Doorn,
Manuel Alfaro (his back is to the photographer),
Walter van Assche, Jet Wimp, Walter Gautschi, Ed Saff and Paco Marcellán.

Topic #5 ——— OP – SF Net 27.1 ——— January 15, 2020

From: Mourad E. H. Ismail (mourad.eh.ismail@gmail.com)
Subject: Report by **Mourad E. H. Ismail**: Askey family memorial service

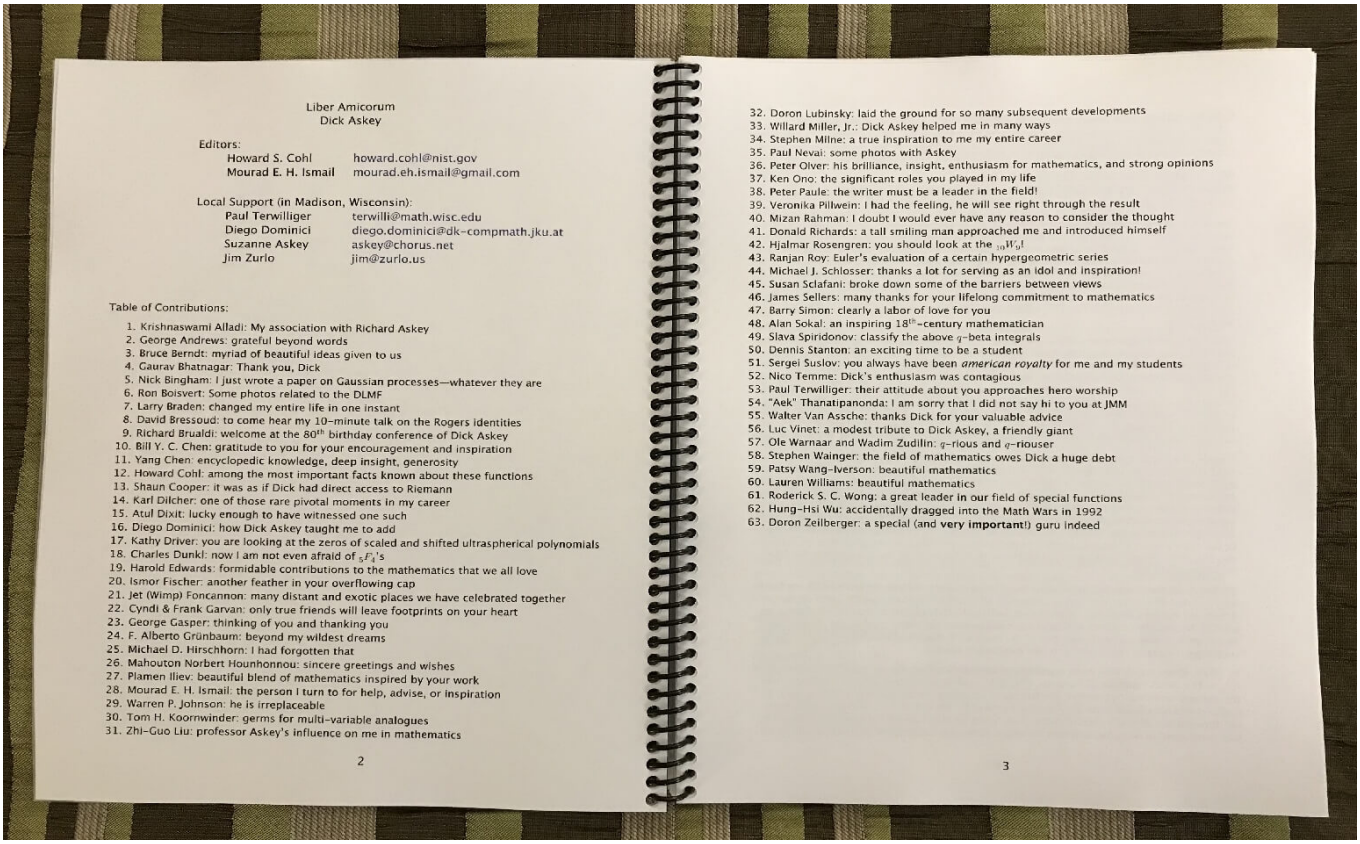
The Askey family held a memorial service for Dick Askey on November 9, 2019. It was held at the Chapel in the Oakwood Village Prairie Ridge in Madison, Wisconsin. The service was conducted by Rev. Eldonna Hazen and Chaplain Wayne Shannon. Opening speeches were given by Dick's kids, Suzanne and Jim followed by Ranjan Roy who also read words from George Andrews. Hung-Hsi Wu from Berkeley and Mourad Ismail also gave speeches. David Foss, Suzanne's husband read a moving "How Do I Love Thee". Several professors from the University of Wisconsin, Departments of Mathematics and Computer Science attended the ceremony. The speeches were very emotional and touched on many aspects of Dick's life and his dedication to his family, mathematics and mathematics education.

After the service, refreshments were served and we had a chance to chat. We all remembered Dick's kindness, mentoring, caring, and impact on many people's lives.

We miss you Dick, and you will always be in our hearts and minds.

From: Howard S. Cohl (howard.cohl@nist.gov) [and Suzanne Askey (askey@chorus.net)]
Subject: Report by **Howard S. Cohl**: *Askey Liber Amicorum*, a Friendship Book for Dick Askey

Upon learning of Dick Askey's illness and his admittance into Hospice Care in Madison, Wisconsin on September 4, 2019, Howard Cohl contacted Mourad Ismail inquiring whether we might prepare a *Liber Amicorum*, a Friendship Book, for Dick Askey. Mourad thought that this was a great idea and indicated that Howard should take the lead in its preparation. After all, we both would be attending the Fall AMS Sectional Meeting at the University of Wisconsin, Madison on Saturday and Sunday September 14–15, 2019 to attend a Special Session on *Special Functions and Orthogonal Polynomials* organized by Paul Terwilliger and Sarah Post. We decided that if all worked out, we could print and present the Friendship Book to Dick on one of the days of the meeting in Madison. So began an intense week and a half long effort to contact, communicate and coordinate with Dick's family, the OPSF community, and all who may have known and worked with Dick, to inquire whether they might contribute a short tribute or an interesting piece of mathematics to be included in the Liber Amicorum—which might also be read out loud on the day we would present the Friendship Book to Dick.



Liber Amicorum
Dick Askey

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Table of Contributions:

1. Krishnaswami Alladi: My association with Richard Askey
2. George Andrews: grateful beyond words
3. Bruce Berndt: myriad of beautiful ideas given to us
4. Gaurav Bhatnagar: Thank you, Dick
5. Nick Bingham: I just wrote a paper on Gaussian processes—whatever they are
6. Ron Boisvert: Some photos related to the DLMF
7. Larry Braden: changed my entire life in one instant
8. David Bressoud: to come hear my 10-minute talk on the Rogers identities
9. Richard Brualdi: welcome at the 80th birthday conference of Dick Askey
10. Bill Y. C. Chen: gratitude to you for your encouragement and inspiration
11. Yang Chen: encyclopedic knowledge, deep insight, generosity
12. Howard Cohl: among the most important facts known about these functions
13. Shaun Cooper: it was as if Dick had direct access to Riemann
14. Karl Dilcher: one of those rare pivotal moments in my career
15. Atul Dixit: lucky enough to have witnessed one such
16. Diego Dominici: how Dick Askey taught me to add
17. Kathy Driver: you are looking at the zeros of scaled and shifted ultraspherical polynomials
18. Charles Dunkl: now I am not even afraid of ${}_3F_4$'s
19. Harold Edwards: formidable contributions to the mathematics that we all love
20. Ismor Fischer: another feather in your overflowing cap
21. Jet (Wimp) Foncannon: many distant and exotic places we have celebrated together
22. Cyndi & Frank Garvan: only true friends will leave footprints on your heart
23. George Gasper: thinking of you and thanking you
24. F. Alberto Grünbaum: beyond my wildest dreams
25. Michael D. Hirschhorn: I had forgotten that
26. Mahouton Norbert Hounhonnou: sincere greetings and wishes
27. Plamen Iliev: beautiful blend of mathematics inspired by your work
28. Mourad E. H. Ismail: the person I turn to for help, advise, or inspiration
29. Warren P. Johnson: he is irreplaceable
30. Tom H. Koornwinder: germs for multi-variable analogues
31. Zhi-Guo Liu: professor Askey's influence on me in mathematics

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32. Doron Lubinsky: laid the ground for so many subsequent developments
33. Willard Miller, Jr.: Dick Askey helped me in many ways
34. Stephen Milne: a true inspiration to me my entire career
35. Paul Nevai: some photos with Askey
36. Peter Olver: his brilliance, insight, enthusiasm for mathematics, and strong opinions
37. Ken Ono: the significant roles you played in my life
38. Peter Paule: the writer must be a leader in the field!
39. Veronika Pillwein: I had the feeling, he will see right through the result
40. Mizan Rahman: I doubt I would ever have any reason to consider the thought
41. Donald Richards: a tall smiling man approached me and introduced himself
42. Hjalmar Rosengren: you should look at the ${}_{10}W_9$!
43. Ranjan Roy: Euler's evaluation of a certain hypergeometric series
44. Michael J. Schlosser: thanks a lot for serving as an idol and inspiration!
45. Susan Sclafani: broke down some of the barriers between views
46. James Sellers: many thanks for your lifelong commitment to mathematics
47. Barry Simon: clearly a labor of love for you
48. Alan Sokal: an inspiring 18th-century mathematician
49. Slava Spiridonov: classify the above q-beta integrals
50. Dennis Stanton: an exciting time to be a student
51. Sergei Suslov: you always have been *american royalty* for me and my students
52. Nico Temme: Dick's enthusiasm was contagious
53. Paul Terwilliger: their attitude about you approaches hero worship
54. "Aek" Thanatipanonda: I am sorry that I did not say hi to you at JMM
55. Walter Van Assche: thanks Dick for your valuable advice
56. Luc Vinet: a modest tribute to Dick Askey, a friendly giant
57. Ole Warnaar and Wadim Zudilin: q-rious and q-riouser
58. Stephen Wainger: the field of mathematics owes Dick a huge debt
59. Patsy Wang-Iverson: beautiful mathematics
60. Lauren Williams: beautiful mathematics
61. Roderick S. C. Wong: a great leader in our field of special functions
62. Hung-Hsi Wu: accidentally dragged into the Math Wars in 1992
63. Doron Zeilberger: a special (and **very important**!) guru indeed

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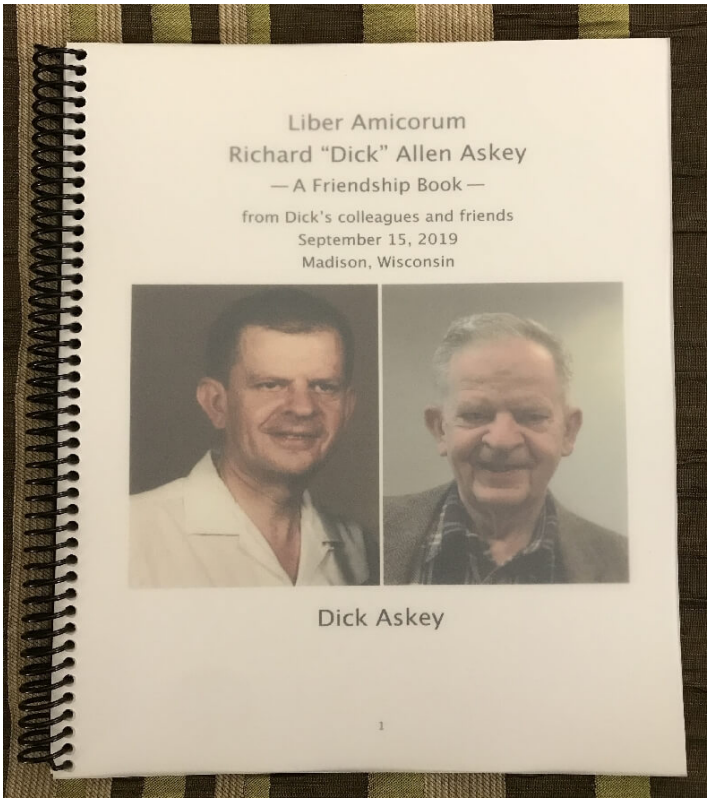
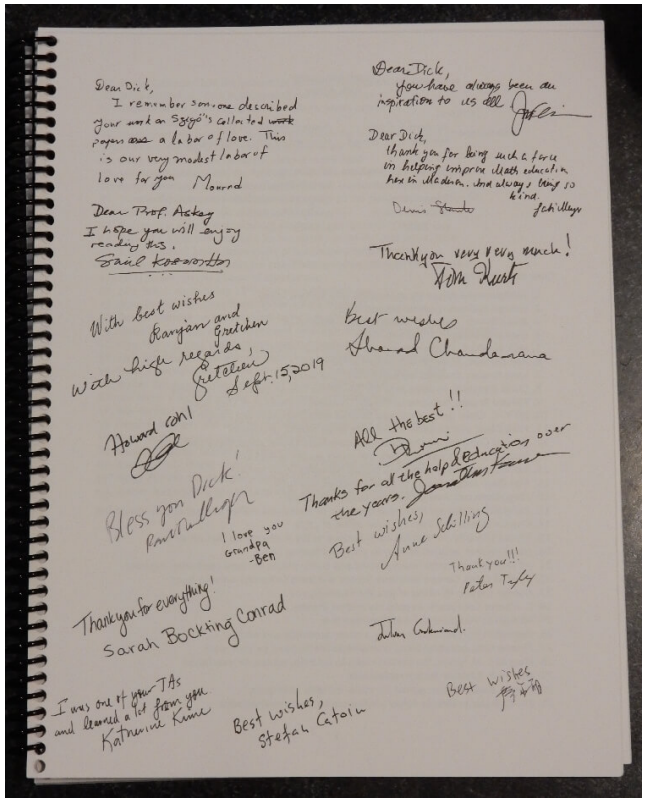
Photo of original Table of Contributions for the first edition Liber Amicorum, a Friendship Book for Dick Askey. Photo taken by Howard Cohl.

On Saturday, September 14, after the last talk of the session in the afternoon, Howard Cohl and Mourad Ismail met Jim Zurlo, Dick's son, on the street at the University of Wisconsin. Jim had offered to drive Howard and Mourad to a FedEX Office Print & Ship Center near the University of Wisconsin in order to obtain a printed copy of the Liber Amicorum. The intention was to present the Friendship Book to Dick on the following day. After a discussion about the requested parameters of the printing, Jim had to get back to his family, and Howard and Mourad had dinner near

the FedEX shop while waiting for the Friendship Book to be printed. The printing took about an hour. We chose the best possible paper which was thick enough that the photographs would not bleed through the opposite pages, and printed the book double sided and used a spiral binding. The printed first edition Liber Amicorum ended up being quite beautiful. It contained 63 contributions, with 62 color photographs and was 106 pages long.





Photos of the cover and signature page for the first edition Liber Amicorum, a Friendship Book for Dick Askey. This original book printed on September 14, 2019, was presented to Dick in Madison, Wisconsin on the morning of Sunday September 15, 2019. On that same morning, the Friendship Book was signed by the following individuals. First column: Mourad Ismail, unknown signature, Ranjan and Gretchen Roy, Howard Cohl, Paul Terwilliger, Ben Hinkel (Suzanne's son and Dick's grandson), Sarah Bockting-Conrad, Katherine Kime, Stefan Catoiu. Second column: Jin-Yi Cai, unknown signature, Dennis Stanton, Tom Kurtz, Sharad Chandarana, Diego Dominci, Jonathan Kane, Anne Schilling, Peter Tingley, Julien Gaboriaud, Hanmeng (Harmony) Zhan. Cover page photo taken by Howard Cohl; Signature page photo taken by Jim Zurlo, Dick's son.

On Sunday, September 15, after the last talk of the morning session, two groups of mathematicians boarded two separate cars to drive to a chapel at Oakwood Village Prairie Ridge, about 10 miles northeast of downtown Madison. The first car was driven by Thomas Kurtz, Emeritus Professor at the University of Wisconsin. He drove Mourad Ismail and Dennis Stanton to the chapel. The second car was driven by Peter Tingley, Loyola University Chicago, who drove Howard Cohl, Diego Dominici, and Anne Schilling to the chapel. Ranjen Roy and his wife drove to the chapel in a separate car from Beloit, Wisconsin, where they live.

After arriving at the Chapel, Dick had not arrived yet, but his family was there as well as several colleagues from the University and elsewhere. Most of the people who were present (there were about 30 people) signed an empty page in the front of the Friendship Book. Dick was sleeping, but was about to wake up and before long he arrived in a wheel chair with a nurse. He was positioned at the front of a circle of chairs with his wife Liz next to him, as well as his son Jim and daughter Suzanne.

l to r: Mourad Ismail, Jim Zurlo (Dick's son), Liz Askey (Dick's wife), Dick Askey, and Suzanne Askey (Dick's daughter). Photo taken by Howard Cohl.

Dick Askey and Suzanne Askey browsing the Liber Amicorum. Photo taken by Howard Cohl.

The whole emotional ceremony lasted approximately 45 minutes. When Dick was ready to start, Suzanne made some short comments. Suzanne pretty much ran the whole show. Howard stood up, gave a short description of the contents of the Friendship Book, and presented it to him. Dick, who wasn't able to move quickly, leafed through the pages and examined the front cover and the table of contents. Suzanne leafed through the book for Dick and showed him some of the many historical photos of Dick and his colleagues and friends, which were contained within the book.

Howard then read out loud the full list of people who had provided written contributions to the Friendship Book. (After Howard's listing of contributors, Mourad pointed out that Howard had left out mentioning his own contribution. Howard located and then affirmed its existence, which brought out laughter in the room.) Dick seemed to be quite emotional during these moments. Afterwards, Mourad gave a short speech about the idea of the Friendship book, describing all the people who responded to our request for contributions, and that they all love Dick, and especially Mourad himself who thanked Dick for all the difference Dick had made in so many people's lives. The whole while Suzanne was visibly comforting Dick.

Mourad then introduced Diego Dominici who presented the OPSFA Lifetime Achievement Award to Dick. (This had previously been shown at the OPSFA-15 meeting in Hagenberg, Austria.) Sev-

Dick Askey's OPSFA Lifetime Achievement Award, presented to Dick Askey by Diego Dominici in Madison, Wisconsin on Sunday September 15, 2019. Photo taken by Peter Paule.

eral people spoke and made some statements about Dick and to Dick, and asked questions of Dick. Dick said a few words about the OPSFA meetings. Both Mourad and Dick talked about the history of the OPSFA meetings and in particular, OPSFA-1, Bar-le-Duc, France, 1984. Dick mentioned that there was fireworks during that meeting! Dick also referred to his Bronze bust of Srinivasa Ramanujan, one of ten copies cast in 1983, which has been recently donated by Dick's family to the Department of Mathematics at the University of Wisconsin—and will be installed in their 9th floor lounge.

Dick, Suzanne Askey and Jim Zurlo made several extended comments. Suzanne asked Howard to read some contributions from the Friendship book and Howard read the selected contributions of George Andrews, Barry Simon, and Doron Zeilberger. Dick also reminisced about the fact that he got the idea for the Askey-scheme at an Oberwolfach meeting in 1977 on "*Combinatorics and Special Functions*". He mentioned that Michael Hoare, in connection with his lecture, distributed

copies of a sheet which contained in graphical way, a part of the present Askey scheme, and which was received very enthusiastically by the audience.

Note that a second edition of the Liber Amicorum is currently being finalized which will contain at least 84 contributions about Dick and 95 color photographs of Dick.

Note added in Proof (by Suzanne Askey).—Dick lived another 3 weeks and up until the last couple days, every day I read to him from the Liber Amicorum. When I was reading to him he perked up, opened his eyes and focused more than he was able to most of the rest of the time. He was very interested and glad to be hearing all that had been written by mathematicians around the world. He was able to hear all of the contributions before he died. I can't put into words how grateful I am that his last weeks were full of the appreciation, respect, and love from all those who contributed to the Liber Amicorum, and the work put into making it by Howard and the upfront work by Mourad in starting the emails of appreciation for Dick pouring into my email. With much gratitude, Suzanne Askey (Dick's daughter).

Topic #7 ——— OP - SF Net 27.1 ——— January 15, 2020

From: Juan J. Moreno-Balcázar (balcazar@ual.es)
Subject: Report by **Juan J. Moreno-Balcázar**: *Two Days on Orthogonal Polynomials*

Report on the 2nd Workshop "Two Days on Orthogonal Polynomials & Special Functions"
Dates: November 21-22, Almería, Spain.

In 1994 Andrei Martínez-Finkelshtein arrived to the Universidad de Almería and he created the research group *Teoría de aproximación y polinomios ortogonales* (TAPO-Approximation Theory and Orthogonal Polynomials) with members of the Universidad de Almería and Universidad de Granada. To celebrate the 25th Anniversary of our research group, we decided to carry out this workshop, that gave continuity to a previous one held in Granada last year. The topics tackled, according to the title of the workshop, were orthogonal polynomials and special functions.

The workshop was very intense with 19 plenary talks given by speakers belonging to the research groups on orthogonal polynomials from Spain and a poster session. It was inaugurated by the Vice Chancellor of Research and Innovation, Diego Luis Valera, Universidad de Almería.

On Thursday morning, the talks were given by Paco Marcellán (Universidad Carlos III de Madrid), Andrei Martínez-Finkelshtein (Baylor University and Universidad de Almería), María José Cantero (Universidad de Zaragoza), Amparo Gil (Universidad de Cantabria), José Luis López (Universidad Pública de Navarra) and Ester Pérez (Universidad de Zaragoza).

The talks on the Friday sessions were given by Jesús Sánchez-Dehesa (Universidad de Granada), Antonio Durán (Universidad de Sevilla), Renato Álvarez (Universidad de Sevilla), Ramón Orive (Universidad de La Laguna), Héctor Pijeira (Universidad Carlos III de Madrid), Guillermo López (Universidad Carlos III de Madrid), Óscar Ciaurri (Universidad de la Rioja), Miguel Piñar (Universidad de Granada), Iván Area (Universidad de Vigo), Juan Luis Varona (Universidad de la Rioja), Manuel Mañas (Universidad Complutense) and David Gómez-Ullate (Universidad de Cádiz).

A special invited talk was given by Gracia Castro (Universidad de Almería and INVISION firm), connecting orthogonal polynomials with medical problems in ophthalmology. It was a nice talk to finish an intense morning.

All the talks were very interesting and motivated the scientific discussion among the participants in the workshop. As a curiosity, the talks were in Spanish but in many cases the slides of the presentations were in English.

The social programme took place on Thursday afternoon. We visited the *Shelters of the Spanish Civil War* which were constructed by the architect Guillermo Langle Rubio (1895–1981) to safeguard the civil population from air strikes during the Spanish Civil War (1936–1939). Later, we could enjoy some places around the city where very famous movies were filmed such as *Patton* (1970) and *Indiana Jones and the Last Crusade* (1989). Finally, the dinner of the meeting was in a well-known restaurant near the marina.

We hope that we can celebrate other anniversaries and join people in Almería once again.

Official photo of the 2nd Workshop "Two Days on Orthogonal Polynomials and Special Functions", November 21–22, 2019, Almería, Spain.

Topic #8 ——— OP – SF Net 27.1 ——— January 15, 2020

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 2019. This list has been separated into two categories.

OP-SF Net Subscriber E-Prints

http://arxiv.org/abs/1911.01423
Two Definite Integrals That Are Definitely (and Surprisingly!) Equal
Shalosh B. Ekhad, Doron Zeilberger, Wadim Zudilin

http://arxiv.org/abs/1911.01744
Solutions for the Lévy-Leblond or parabolic Dirac equation and its generalizations
Sijia Bao, Denis Constales, Hendrik De Bie, Teppo Mertens

http://arxiv.org/abs/1911.02612
Periodic Jacobi Matrices on Trees
Nir Avni, Jonathan Breuer, Barry Simon

http://arxiv.org/abs/1911.03707
Where do the maximum absolute q-series coefficients of $(1-q)(1-q^2)(1-q^3)\dots(1-q^{n-1})(1-q^n)$ occur?
Alexander Berkovich, Ali K. Uncu

http://arxiv.org/abs/1911.04849
Further equidistribution of set-valued statistics on permutations
Jianxi Mao, Jiang Zeng

http://arxiv.org/abs/1911.04905
Complex asymptotics in lambda for the Gegenbauer functions $C_\lambda^\alpha(z)$ and $D_\lambda^\alpha(z)$ with $z \in (-1,1)$
Loyal Durand

http://arxiv.org/abs/1911.05854
On the Riemann-Hilbert problem for a q-difference Painlevé equation
Nalini Joshi, Pieter Roffelsen

http://arxiv.org/abs/1911.06375
The Boundedness of the Ornstein-Uhlenbeck semigroup on variable Lebesgue spaces with respect to the Gaussian measure
Jorge Moreno, Ebner Pineda, Wilfredo Urbina

http://arxiv.org/abs/1911.08314
Howe duality and algebras of the Askey-Wilson type: an overview
Julien Gaboriaud, Luc Vinet, Stéphane Vinet

http://arxiv.org/abs/1911.08732
A crystal on decreasing factorizations in the 0-Hecke monoid
Jennifer Morse, Jianping Pan, Wencin Poh, Anne Schilling

http://arxiv.org/abs/1911.10533
Asymptotics of Polynomials Orthogonal on a Cross with a Jacobi-type Weight
Ahmad Barhoumi, Maxim L. Yattselev

http://arxiv.org/abs/1911.10602
Corrigendum on the proof of completeness for exceptional Hermite polynomials
David Gomez-Ullate, Yves Grandati, Robert Milson

http://arxiv.org/abs/1911.11280
Zero sets, entropy, and pointwise asymptotics of orthogonal polynomials
Roman Bessonov, Sergey Denisov

http://arxiv.org/abs/1911.11316
Harmonic analysis for rank-1 Randomised Horn Problems
Jiyuan Zhang, Mario Kieburg, Peter J. Forrester

http://arxiv.org/abs/1911.11925
An Algebraic Geometric Foundation for a Classification of Superintegrable Systems in Arbitrary Dimension
Jonathan Kress, Konrad Schöbel, Andreas Vollmer

http://arxiv.org/abs/1911.12195
Minimal energy point systems on the unit circle and the real line
Marcell Gaál, Béla Nagy, Zsuzsanna Nagy-Csiha, Szilárd Révész

http://arxiv.org/abs/1911.12746
Discrete-Continuous Jacobi-Sobolev Spaces and Fourier Series
Abel Díaz-González, Francisco Marcellán-Español, Héctor Pijeira-Cabrera, Wilfredo Urbina-Romero

http://arxiv.org/abs/1912.00353
Quasi-orthogonality and zeros of some ${}_2\varphi_2$ and ${}_3\varphi_2$ polynomials
P. P. Kar, K. Jordaan, P. Gochhayat, M. K. Nangho

http://arxiv.org/abs/1912.00765
q-Supercongruences modulo the fourth power of a cyclotomic polynomial via creative microscoping
Victor J. W. Guo

http://arxiv.org/abs/1912.01199
On Hurwitz zeta function and Lommel functions
Atul Dixit, Rahul Kumar

http://arxiv.org/abs/1912.01475
A new family of orthogonal polynomials in three variables
Rabia Aktaş, Iván Area, Esra Güldoğan

http://arxiv.org/abs/1912.02142
Critical Behavior of Non-Intersecting Brownian Motions
Tom Claeys, Thorsten Neuschel, Martin Venker

http://arxiv.org/abs/1912.02282
Bound states and the potential parameter spectrum
A. D. Alhaidari, H. Bahlouli

http://arxiv.org/abs/1912.02377
Analytical Approximations to the Dynamics of Nonlinear Level Crossing Models
Chon-Fai Kam, Yang Chen

http://arxiv.org/abs/1912.02957
Shift-invariance for vertex models and polymers
Alexei Borodin, Vadim Gorin, Michael Wheeler

http://arxiv.org/abs/1912.03390
Compact formulas for Macdonald polynomials and quasisymmetric Macdonald polynomials
Sylvie Corteel, Jim Haglund, Olya Mandelshtam, Sarah Mason, Lauren Williams

http://arxiv.org/abs/1912.03674
Inversion sequences avoiding pairs of patterns
Chunyan Yan, Zhicong Lin

http://arxiv.org/abs/1912.03680
Analytic properties of sextet polynomials of hexagonal systems
Guanru Li, Lily Li Liu, Yi Wang

http://arxiv.org/abs/1912.03689
Proofs of some partition identities conjectured by Kanade and Russell
Hjalmar Rosengren

http://arxiv.org/abs/1912.04599
Global fluctuations for Multiple Orthogonal Polynomial Ensembles
Maurice Duits, Benjamin Fahs, Rostyslav Kozhan

http://arxiv.org/abs/1912.04605
On algebraic Stein operators for Gaussian polynomials
Ehsan Azmoodeh, Dario Gasbarra, Robert E. Gaunt

http://arxiv.org/abs/1912.06245
Connectivity concerning the last two subconstituents of a Q-polynomial distance-regular graph
Sebastian M. Cioabă, Jack H. Koolen, Paul Terwilliger

http://arxiv.org/abs/1912.06345
The Irrationality Measure of π is at most 7.103205334137...
Doron Zeilberger, Wadim Zudilin

http://arxiv.org/abs/1912.06488
Polynomial Representations of the Lie Superalgebra $\mathfrak{osp}(1|2n)$
A.K. Bisbo, H. De Bie, J. Van der Jeugt

http://arxiv.org/abs/1912.06651
Some remarks on generalized Fibonacci and Lucas polynomials
Johann Cigler

http://arxiv.org/abs/1912.06829
The method of creative microscoping
Wadim Zudilin

http://arxiv.org/abs/1912.07151
Constructing high order spherical designs as a union of two of lower order
Mozhgan Mohammadpour, Shayne Waldron

http://arxiv.org/abs/1912.07533
Orthogonal structure and orthogonal series in and on a double cone or a hyperboloid
Yuan Xu

http://arxiv.org/abs/1912.07597
Lectures on exceptional orthogonal polynomials and rational solutions to Painlevé equations
David Gómez-Ullate, Robert Milson

http://arxiv.org/abs/1912.08070
Proof of a supercongruence conjectured by Sun through a q-microscope
Victor J. W. Guo

http://arxiv.org/abs/1912.08658
Entanglement entropy of two disjoint intervals separated by one spin in an XX quantum spin chain
L. Brightmore, G. P. Geher, A. R. Its, V. E. Korepin, F. Mezzadri, M. Y. Mo, J. A. Virtanen

http://arxiv.org/abs/1912.08959
Discrete Painlevé Equations
Nalini Joshi

http://arxiv.org/abs/1912.09037
Universality near the gradient catastrophe point in the semiclassical sine-Gordon equation
Bing-Ying Lu, Peter D. Miller

http://arxiv.org/abs/1912.09377
Continuity of Weighted Operators in A_p Weights and Steklov Problem for Orthogonal Polynomials
Michel Alexis, Alexander Aptekarev, Sergey Denisov

http://arxiv.org/abs/1912.09698
Levin methods for highly oscillatory integrals with singularities
Yinkun Wang, Shuhuang Xiang

http://arxiv.org/abs/1912.10259
On Christol's conjecture
Y. Abdelaziz, C. Koutschan, J-M. Maillard

http://arxiv.org/abs/1912.10381
Automatic Discovery of Irrationality Proofs and Irrationality Measures
Doron Zeilberger, Wadim Zudilin

http://arxiv.org/abs/1912.10728
On the Sheffer-type polynomials related to the Mittag-Leffler functions: applications to fractional evolution equations
K. Górska, A. Horzela, K. A. Penson, G. Dattoli

http://arxiv.org/abs/1912.11266
Beyond the beta integral method: transformation formulas for hypergeometric functions via Meijer's G function
D. B. Karp, E. G. Prilepkina

http://arxiv.org/abs/1912.11514
Superconformal indices, Seiberg dualities and special functions
Vyacheslav P. Spiridonov

http://arxiv.org/abs/1912.11571
The rational Heun operator and Wilson biorthogonal functions
Satoshi Tsujimoto, Luc Vinet, Alexei Zhedanov

http://arxiv.org/abs/1912.12019
Isospectral flows related to Frobenius-Stickelberger-Thiele polynomials
Xiang-Ke Chang, Xing-Biao Hu, Jacek Szmigielski, Alexei Zhedanov

http://arxiv.org/abs/1912.12711
Positive intertwiners for Bessel functions of type B
Margit Rösler, Michael Voit

http://arxiv.org/abs/1912.12971
Introduction to the theory of elliptic hypergeometric integrals
V. P. Spiridonov

http://arxiv.org/abs/1912.12974
Exponentially small expansions related to the parabolic cylinder function
R. B. Paris

Other Relevant OP-SF E-Prints

http://arxiv.org/abs/1911.00186
New series identities with Cauchy, Stirling, and harmonic numbers, and Laguerre polynomials
Khristo N. Boyadzhiev

http://arxiv.org/abs/1911.01029
Ramanujan sum and Chebotarev densities
Biao Wang

http://arxiv.org/abs/1911.01076
Interpolating the Derivatives of the Gamma Function
Vassilis G. Papanicolaou

http://arxiv.org/abs/1911.01087
Frobenius' theta function and Arakelov invariants in genus three
Robin de Jong

http://arxiv.org/abs/1911.01322
The matching condition for larger size Riemann-Hilbert problems
Leslie Molag

http://arxiv.org/abs/1911.01350
Invariants of models of genus one curves via modular forms and determinantal representations
Manh Hung Tran

http://arxiv.org/abs/1911.01514
On the Form of Solutions of Fuchsian differential Equations with n regular singular Points
Albert Huber

http://arxiv.org/abs/1911.01790
Proof of two supercongruences by the Wilf-Zeilberger method
Guo-Shuai Mao

http://arxiv.org/abs/1911.02004
A note on Legendre, Hermite, Chebyshev, Laguerre and Gegenbauer wavelets with an application on sbvps arising in real life
Amit K. Verma, Diksha Tiwari

http://arxiv.org/abs/1911.02008
Machine Learning meets Number Theory: The Data Science of Birch-Swinnerton-Dyer
Laura Alessandretti, Andrea Baronchelli, Yang-Hui He

http://arxiv.org/abs/1911.02015
Elliptic functions and flotation
P. L. Robinson

http://arxiv.org/abs/1911.03174
Infinite dimensional systems of particles with interactions given by Dunkl operators
Andrei Velicu

http://arxiv.org/abs/1911.03190
Probabilistic Models for Gram's Law
Cătălin Hanga, Christopher Hughes

http://arxiv.org/abs/1911.03252
Linear integrable systems on quad-graphs
Alexander I. Bobenko, Yuri B. Suris

http://arxiv.org/abs/1911.03942
Question about integral of product of four Hermite polynomials integrated with squared weight
Alexander Minakov

http://arxiv.org/abs/1911.03968
The fastest series for $1/\pi$ due to Ramanujan. (A complete proof using Maple)
Jesús Guillera

http://arxiv.org/abs/1911.04029
On a Hilbert Space Reformulation of Riemann Hypothesis
Boqing Xue

http://arxiv.org/abs/1911.04141
$\mathbb{Q}$-linear dependence of certain Bessel moments
Yajun Zhou

http://arxiv.org/abs/1911.04795
A study on the fixed points of the γ function
Andrea Frosini, Giulia Palma, Elisa Pergola, Simone Rinaldi

http://arxiv.org/abs/1911.05456
New series for powers of π and related congruences
Zhi-Wei Sun

http://arxiv.org/abs/1911.05467
ChebNet: Efficient and Stable Constructions of Deep Neural Networks with Rectified Power Units using Chebyshev Approximations
Shanshan Tang, Bo Li, Haijun Yu

http://arxiv.org/abs/1911.05583
Fast Computation of Orthogonal Systems with a Skew-symmetric Differentiation Matrix
Arieh Iserles, Marcus Webb

http://arxiv.org/abs/1911.05688
On the Relativized Alon Second Eigenvalue Conjecture I: Main Theorems, Examples, and Outline of Proof
Joel Friedman, David Kohler

http://arxiv.org/abs/1911.05883
A ratio of many gamma functions and its properties with applications
Feng Qi, Wen-Hui Li, Shu-Bin Yu, Xin-Yu Du, Bai-Ni Guo

http://arxiv.org/abs/1911.05982
Stable equilibria for the roots of the symmetric continuous Hahn and Wilson polynomials
J.F. van Diejen

http://arxiv.org/abs/1911.05984
Rate of approximation of $zf'(z)$ by special sums associated with the zeros of the Bessel polynomials
Mikhail A. Komarov

http://arxiv.org/abs/1911.06037
Slice Fueter-regular functions
Riccardo Ghiloni

http://arxiv.org/abs/1911.06060
A zeta function related to the transition matrix of the discrete-time quantum walk on a graph
Norio Konno, Iwao Sato, Etsuo Segawa

http://arxiv.org/abs/1911.06115
Asymptotic formulas for harmonic series in terms of a non-trivial zero on the critical line
Artur Kawalec

http://arxiv.org/abs/1911.07059
On Hankel matrices commuting with Jacobi matrices from the Askey scheme
František Štampach, Pavel Šťovíček

http://arxiv.org/abs/1911.07129
On the Multiple Zeta Values $\zeta(\{2\}^k)$
Mario DeFranco

http://arxiv.org/abs/1911.07604
Two New Identities Involving the Catalan Numbers: A classical approach
Helmut Prodinger

http://arxiv.org/abs/1911.07901
Radii problems for normalized hyper-Bessel function
Evrim Toklu, Osman Kara

http://arxiv.org/abs/1911.08218
New explicitly diagonalizable Hankel matrices related to the Stieltjes-Carlitz polynomials
František Štampach, Pavel Šťovíček

http://arxiv.org/abs/1911.08458
A note on the number of irrational odd zeta values
Li Lai, Pin Yu

http://arxiv.org/abs/1911.08767
Groups, Jacobi functions and rigged Hilbert spaces
E. Celeghini, M. Gadella, M. A. del Olmo

http://arxiv.org/abs/1911.08841
Two properties of the partial theta function
Vladimir Petrov Kostov

http://arxiv.org/abs/1911.09139
Certain hybrid polynomials associated with Sheffer sequences
Nabiullah Khan, Talha Usman, Mohd Aman

http://arxiv.org/abs/1911.09486
Structures de Frobenius forte rigidité et équations hypergéométriques
Daniel Vargas Montoya

http://arxiv.org/abs/1911.09497
Proof of some hypergeometric congruences via the WZ method
Chen Wang

http://arxiv.org/abs/1911.09700
Algebraic solution to constrained bi-criteria decision problem of rating alternatives through pair-wise comparisons
Nikolai Krivulin

http://arxiv.org/abs/1911.10282
Titchmarsh-Weyl formula for the spectral density of a class of Jacobi matrices in the critical case
Serguei Naboko, Sergey Simonov

http://arxiv.org/abs/1911.10288
On sequences associated to the invariant theory of rank two simple Lie algebras
Alin Bostan, Jordan Tirrell, Bruce W. Westbury, Yi Zhang

http://arxiv.org/abs/1911.10319
Elementary hypergeometric functions, Heun functions, and moments of MKZ operators
Ana Maria Acu, Ioan Rasa

http://arxiv.org/abs/1911.10465
Meromorphy of local zeta functions in smooth model cases
Joe Kamimoto, Toshihiro Nose

http://arxiv.org/abs/1911.10475
Asymptotic behavior of orthogonal polynomials without the Carleman condition
Dmitri Yafaev

http://arxiv.org/abs/1911.10491
On supercongruences for truncated sums of squares of basic hypergeometric series
Mohamed El Bachraoui

http://arxiv.org/abs/1911.10507
The Christoffel problem by fundamental solution of the Laplace equation
Qi-Rui Li, Dongrui Wan, Xu-Jia Wang

http://arxiv.org/abs/1911.10586
(G'/G)-Expansion Method and Weierstrass Elliptic Function Method Applied to Coupled Wave Equation
E.V. Krishnan, M. Al Ghabshi, M. Alquran

http://arxiv.org/abs/1911.10593
Standard vortex solutions of the extended Painlevé P.D.E
Panayotis Smyrnelis

http://arxiv.org/abs/1911.10944
Green's function of the screened Poisson's equation on the sphere
Ramy Tanios, Samah El Mohtar, Omar Knio, Issam Lakkis

http://arxiv.org/abs/1911.12708
Generalised Kähler Structure on $\mathbb{C}P^2$ and Elliptic Functions
Francesco Bonechi, Jian Qiu, Marco Tarlini

http://arxiv.org/abs/1911.12787
Flags of sheaves, quivers and symmetric polynomials
Giulio Bonelli, Nadir Fasola, Alessandro Tanzini

http://arxiv.org/abs/1912.00500
Riemann-Hilbert Characterisation of Rational Functions with a General Distribution of Poles on the Extended Real Line Orthogonal with Respect to Varying Exponential Weights: Multi-Point Padé Approximants and Asymptotics
A. Vartanian, X. Zhou

http://arxiv.org/abs/1912.00538
Symmetries of the space of solutions to special double confluent Heun equation of negative integer order and its applications
Sergey I. Tertychniy

http://arxiv.org/abs/1912.00663
Some supercongruences arising from symbolic summation
Ji-Cai Liu

http://arxiv.org/abs/1912.01035
Periodic Pólya Urns, the Density Method, and Asymptotics of Young Tableaux
Cyril Banderier, Philippe Marchal, Michael Wallner

http://arxiv.org/abs/1912.01090
The 2-Adic Analysis of Stirling Numbers of the Second Kind via Higher Order Bernoulli Numbers and polynomials
Arnold Adelberg

http://arxiv.org/abs/1912.01126
Riordan arrays, the A-matrix, and Somos 4 sequences
Paul Barry

http://arxiv.org/abs/1912.01407
A new method of constructing Askey-Wilson type integral
Chuanan Wei

http://arxiv.org/abs/1912.01571
Zeta functions of Z_p-towers of curves
Daqing Wan

http://arxiv.org/abs/1912.01928
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Eimear Byrne, Giuseppe Cotardo, Alberto Ravagnani

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Topic #9 ——— OP - SF Net 27.1 ——— January 15, 2020

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 27.2 should be sent by March 1, 2020.

OP-SF NET is an electronic newsletter of the SIAM Activity Group on Special Functions and Orthogonal Polynomials. 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 SIAM-OPSF (OP-SF Talk).

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.

WWW home page of this Activity Group:
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The elected Officers of the Activity Group (2020-2022) are:

Peter Alan Clarkson, Chair
Luc Vinet, Vice Chair
Andrei Martínez-Finkelshtein, Program Director
Teresa E. Pérez, Secretary

The appointed officers are:

Howard Cohl, OP-SF NET co-editor
Sarah Post, OP-SF NET co-editor
Diego Dominici, OP-SF Talk moderator
Bonita Saunders, Webmaster and OP-SF Talk moderator

Topic #10 ——— OP - SF Net 27.1 ——— January 15, 2020

From: OP-SF Net Editors
Subject: Thought of the Month by **Francesco Giacomo Tricomi**

"Mi auguro che, se anche non fossi sempre riuscito a rendere facili le cose difficili, almeno non mi si trovi mai colpevole di rendere artificiosamente difficili le cose facili!."

"Even if I may not have always succeeded in simplifying difficult things, I hope that no one will ever find me guilty of artificially complicating easy things!"

Francesco Giacomo Tricomi, Torino, 1 July 1959. Quoted in the preface of *Esercizi e Complementi di Analisi Matematica Parte Seconda, Terza Edizione*, CEDAM, Padova (1960).

Contributed by Francesco Mainardi.