O P-S F N E T – Volume 26, Number 5 – September 15, 2019

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

http://math.nist.gov/opsf

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Calendar of Events:

September 14-15, 2019
AMS Fall Central Sectional Meeting
 Special Session on "Special Functions and Orthogonal Polynomials"
University of Wisconsin-Madison, Madison, Wisconsin, USA
http://www.ams.org/meetings/sectional/2267_program.html

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

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 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 26.5 ——— September 15, 2019

From: Nalini Joshi (nalini.joshi@sydney.edu.au)
Subject: Announcement: *Discrete Painlevé Equations* book by **Nalini Joshi**

It may be of interest to some members of the OPSFA mailing list to know about the following new book:

Nalini Joshi, "Discrete Painlevé Equations"
Conference Board of the Mathematical Sciences (CBMS),
Regional Conference Series in Mathematics, Volume: 131; 2019; 146 pp.
Nalini Joshi, University of Sydney, Sydney, Australia
A co-publication with the AMS (and CBMS).

Discrete Painlevé equations are nonlinear difference equations, which arise from translations on crystallographic lattices. The deceptive simplicity of this statement hides immensely rich mathematical properties, connecting dynamical systems, algebraic geometry, Coxeter groups, topology, special functions theory, and mathematical physics.

This book necessarily starts with introductory material to give the reader an accessible entry point to this vast subject matter. It is based on lectures that the author presented as principal lecturer at a Conference Board of Mathematical Sciences and National Science Foundation Conference, NSF/CBMS Regional Research Conference on Discrete Painlevé Equations, on May 16-20, 2016 in Edinburg, Texas, USA. Instead of technical theorems or complete proofs, the book relies on providing essential points of many arguments through explicit examples, with the hope that they will be useful for applied mathematicians and physicists.

Readership: Graduate students and researchers interested in integrable systems, mathematical physics, applied mathematics and special functions, as well as resolution of singularities, dynamical systems, and birational geometry.

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Topic #2 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Ole Warnaar (o.warnaar@maths.uq.edu.au)
Subject: Announcement: Special Issue of SIGMA on *Elliptic Integrable Systems*

This is to inform you that there is a Special Issue of the journal SIGMA entitled
Elliptic Integrable Systems, Special Functions and Quantum Field Theory.
The Guest Editors for this special issue are:

    Martin Hallnäs (Chalmers University of Technology and University of Gothenburg, Sweden)
    Masatoshi Noumi (Kobe University, Japan)
    Vyacheslav P. Spiridonov (JINR, Dubna and NRU HSE, Moscow, Russia)
    S. Ole Warnaar (The University of Queensland, Australia)

Topics for this special issue will include:

- elliptic hypergeometric series and integrals;

- univariate and multivariate elliptic hypergeometric (bi-)orthogonal functions;

- elliptic determinants and theta functions on root systems;

- elliptic double affine Hecke algebras;

- elliptic integrable systems, Painlevé equations and isomonodromy problems;

- applications to superconformal indices and partition functions in quantum field theory and statistical mechanics;

- applications in quantum mechanics, probability theory and combinatorics.

This issue is related to the Workshop:
Elliptic Integrable Systems, Special Functions and Quantum Field Theory
(June 16–20, 2019, Nordita, Stockholm, Sweden).

Workshop participants and all other researchers whose work is concerned with the above topics are invited to submit papers to the special issue. Both, original research articles and

review papers will be considered.

How to Submit an Article to the Issue.

There are no paper length limits to the submitted works. The deadline for the submission to the special issue is February 29, 2020. All articles will go through the standard peer reviewing procedure of SIGMA. Papers can be submitted at any time; if you have your paper ready, you can submit it and the reviewing process will start immediately. Papers will be published shortly after final acceptance by the editors. Each contribution will be indexed in the relevant databases as soon as it is published without waiting for the completion of the entire issue.

You can find all necessary information here:

https://www.emis.de/journals/SIGMA/elliptic-integrable-systems.html.

Topic #3 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Clemente Cesarano (c.cesarano@uninettunouniversity.net)
Subject: Announcement: PhD Position in Rome, Italy with **Clemente Cesarano**

We coordinate a PhD course at International Telematic University Uninettuno, Rome, Italy, and call for applications for the academic year 2019/2020. Two scholarships are foreseen for foreign students. Although the doctorate is an engineering field, since I am the co-ordinator and therefore a member of the board, I can have students on topics related to orthogonal polynomials and related fields. If you have any interested students, or are an interested student, please contact me. Also consider that readers of this Newsletter could act as co-advisors for this doctoral course.

For more details about this PhD program and how you can apply, see the following link.

Thank you very much for attention,
Clemente Cesarano, Associate Professor of Numerical Analysis,
Head of Section of Mathematics, Pro-Dean of Faculty of Engineering,
International Telematic University Uninettuno,
Corso Vittorio Emanuele II, 39, 00186 Roma, Italy
Phone: +39 06 69207675
https://www.uninettunouniversity.net/it/sezione-di-matematica.aspx

Topic #4 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Ana Loureiro (anafsl@gmail.com)
Subject: Announcement: LMS-CMI Research School on Random Matrices in Reading, UK

LMS-CMI Research School: *Methods for Random Matrix Theory and Applications*

May 11 to May 15, 2020 at the University of Reading.
Funded by the London Mathematical Society and the Clay Mathematics Institute.

Organized by Igor Krasovsky and Jani A. Virtanen
Contact: j.a.virtanen@reading.ac.uk

MAIN LECTURERS:

Estelle Basor (American Institute of Mathematics)
Tamara Grava (University of Bristol and SISSA)
Alexander Its (Indiana University–Purdue University Indianapolis)

CLAY LECTURER:

Jon Keating (University of Oxford from September 2019)

GUEST LECTURER:

Diane Holcomb (KTH Royal Institute of Technology)

COURSE DESCRIPTION:

Lecture Course 1: (Estelle Basor) Operator theoretic methods and their applications
Lecture Course 2: (Alexander Its) Painlevé equations and random matrix theory
Lecture Course 3: (Tamara Grava) Nonlinear Hamiltonian PDEs and Painlevé transcendents

For further information, please visit:
https://janivirtanen.wordpress.com/research-school-2020/.

Topic #5 ———— OP – SF Net 26.5 ———— September 15, 2019

From: Walter Van Assche (walter.vanassche@kuleuven.be) and Erik Koelink (e.koelink@math.ru.nl)
Subject: Announcement: OPSFA Summer School 2020 in Nijmegen, The Netherlands

OPSFA Summer School 2020
Date: 10–14 August 2020
Where: Radboud University, Nijmegen, The Netherlands
Organizers: Erik Koelink and Walter Van Assche

The 2020 summer school is part of a series of OPSFA–summer schools, and is aimed at PhD–students in these and related topics. Interested post–docs, master students, etc are also welcome to participate.

Course Programme:

- Hypergeometric functions of several variables and harmonic analysis
  Lecturer: Margit Rösler (Universität Paderborn, Germany)
- Orthogonal polynomials and quantum information/computing
  Lecturer: Luc Vinet (Université de Montréal, Canada)
- Matrix valued orthogonal polynomials
  Lecturer: Pablo Román (Universidad Nacional de Córdoba, Argentina)
- Numerical analysis: quadratures and Krylov spaces
  Lecturer: Daan Huybrechs (K.U. Leuven, Belgium)
- Number theory and special functions: modular functions
  Lecturer: Wadim Zudilin (Radboud Universiteit, The Netherlands)

Applications:
The online application form will become available on the 1st of December 2019. There is a registration fee of €300. The fee includes the registration fees, course materials, access

to library and IT facilities, coffee/tea, lunch, and a number of social activities. Lodging in student accommodation will be possible.

A limited number of scholarships will be available. See the website on how to apply.

Want to learn more about the previous editions?
Have a look at this website: https://wis.kuleuven.be/events/archive/OPSFA

Topic #6 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Mark MacLean (macleanm@seattleu.edu) and Štefko Miklavič (stefko.miklavic@upr.si)
Subject: Announcement: Combinatorics around the q-Onsager algebra, Slovenia

Conference website: https://conferences.famnit.upr.si/indico/event/15/overview

We are organizing a conference next year entitled *Combinatorics around the q-Onsager algebra*. At the conference we will be celebrating the 65th birthday of Paul Terwilliger. This conference will take place in beautiful Kranjska Gora, Slovenia, on July 13–18, 2020.

The general theme of this conference will be the mathematical topics that Paul has worked on over the years (which all have relationships to the q-Onsager algebra). These topics include the following:

- topics in algebraic graph theory, such as distance-regular graphs, association schemes, the subconstituent algebra, and the Q-polynomial property;
- topics in linear algebra, such as Leonard pairs, tridiagonal pairs, billiard arrays, lowering-raising triples, and a linear algebraic approach to the orthogonal polynomials of the Askey scheme;
- topics in Lie theory, such as the tetrahedron algebra and the Onsager algebra;
- topics in algebras and their representations, such as the equitable presentation of $U_q(sl_2)$, the q-tetrahedron algebra, the q-Onsager algebra in mathematical physics, and the universal Askey–Wilson algebra.

The confirmed invited speakers so far include:

- Eiichi Bannai (Shanghai Jiao Tong University, China)
- Pascal Baseilhac (Université de Tours, France)
- Samuel Belliard (Université Paris Saclay, France)
- Sarah Bockting-Conrad (DePaul University, Chicago, USA)
- Sebastian Cioabă (University of Delaware, Newark, USA)
- Darren Funk-Neubauer (Colorado State University – Pueblo, USA)
- Hau-Wen Huang (National Central University, Zhongli, Taiwan)
- Tatsuro Ito (Anhui University, Hefei, China)
- Vaughan Jones (Vanderbilt University, Nashville, USA)
- Aleksandar Jurišić (University of Ljubljana, Slovenia)
- Jack Koolen (University of Science and Technology of China, Hefei, China)
- Tom Koornwinder (University of Amsterdam, Netherlands)
- Jae-ho Lee (University of North Florida, Jacksonville, USA)
- William Martin (Worcester Polytechnic Institute, USA)

- Mikhail Muzychuk (Ben-Gurion University of the Negev, Beer-Sheva, Israel)
- Hiroshi Nozaki (Aichi University of Education, Kariya, Japan)
- Safet Penjić (University of Primorska, Koper, Slovenia)
- Sarah Post (University of Hawai'i at Mānoa, USA)
- Hjalmar Rosengren (Chalmers University of Technology, Gothenburg, Sweden)
- Supalak Sumalroj (Silpakorn University, Bangkok, Thailand)
- Hajime Tanaka (Tohoku University, Sendai, Japan)
- Luc Vinet (Université de Montréal, Canada)
- Yuta Watanabe (Tohoku University, Sendai, Japan)
- Alexei Zhedanov (Renmin University of China, Beijing, China)

In addition to invited talks, a limited number of contributed talks will also be available.

Venue:
The conference will take place in beautiful Kranjska Gora, Slovenia. Kranjska Gora is an attractive mountain and tourist sports centre nestled in the Julian Alps at the triple border point of Slovenia, Italy and Austria. In the winter it sees Alpine skiers compete and top ski jumpers break new records at the near-by Planica. Cyclists endeavour to conquer the highest Slovenian mountain pass, and hikers can stop by many points of interest. See https://www.kranjska-gora.si/en.

This will be a satellite conference of the 8th European Congress of Mathematics, which will be held the week prior in Portorož, Slovenia.

For more information, please visit the conference website, or contact the co-organizers: Mark MacLean and Štefko Miklavič.

Topic #7 ——— OP – SF Net 26.5 ——— September 15, 2019

From: OP-SF Net Editors
Subject: Book Review by Bressoud: *Topics and Methods in q-Series* by **James McLaughlin**

Review of the book, *Topics and Methods in q-Series*, Monographs in Number Theory: Volume 8, World Scientific, 2017, by James McLaughlin.

If we replace the binomial power $(1+x)^n$ by the q-binomial power, $(1+x)(1+xq)\cdots(1+xq^{n-1})$, and expand it as a polynomial in x, we get a generalization of the binomial coefficient in which $(1-q)(1-q^2)\cdots(1-q^n)/(1-q)^n$ plays the role of $n!$. From this simple observation, q-series emerge.

Over the past half century, the world of q-series has grown to become one of the most exciting areas of mathematical research. Its origins lie in Euler's investigations of the generating functions for partitions and Jacobi's theta functions. It has proven to be intimately tied to many combinatorial problems from tilings to knot theory as well as to an understanding of special functions and orthogonal polynomials, Lie algebras and representation theory, and aspects of mathematical physics that range from statistical mechanics to particle theory. Explorations of its hidden patterns have spurred the ongoing development of computer algebra.

The relevance of q-series to contemporary mathematics truly blossomed in the 1970's due to a confluence of factors that included I. G. Macdonald's realization of the connection between affine root systems and the Dedekind η-function [Invent. Math. 15 (1972), 91–143; MR0357528], the start of a long and productive collaboration between G. E. Askey and R. A. Andrews exploring the q-analogs of orthogonal polynomials [see especially G. E. Askey and R. A. Andrews, in *Higher combinatorics (Proc. NATO Advanced Study Inst., Berlin, 1976)*, 3–26, NATO Adv. Study Inst. Ser., Ser. C: Math. Phys. Sci., 31, Reidel, Dordrecht, 1977; MR0519776], the publication of Andrews' foundational work *The theory of partitions* [reprint of the 1976 original, Cambridge Math. Lib., Cambridge Univ. Press, Cambridge, 1998; MR1634067], B. C. Berndt's decision to systemically explain and—where possible—prove every identity in Ramanujan's personal notebooks (the last of these volumes is [*Ramanujan's notebooks. Part V*, Springer, New York, 1998; MR1486573]), Andrews' discovery of Ramanujan's "Lost Notebook" on mock theta functions [Amer. Math. Monthly 86 (1979), no. 2, 89–108; MR0520571], and R. J. Baxter's recognition of the role of q-series in statistical mechanics [*Exactly solved models in statistical mechanics*, Academic Press, London, 1982; MR0690578].

No single book could possibly serve as an introduction to the breadth of this field today. McLaughlin, in the book under review, has undertaken a simpler but still ambitious goal: to introduce the reader to the world of basic hypergeometric series and their identities. This is not the first introduction to these series. W. N. Bailey included a chapter on them in his 1935 *Generalized hypergeometric series* [reprint, Cambridge Tracts in Mathematics and Mathematical Physics, No. 32, Stechert–Hafner, Inc., New York, 1964; MR0185155, [Note added by editor, see also Zbl:0011.02303]]. In 1990, G. Gasper Jr. and M. Rahman published what is—now in its second edition—the standard encyclopedic reference to these series [*Basic hypergeometric series*, second edition, Encyclopedia Math. Appl., 96, Cambridge Univ. Press, Cambridge, 2004; MR2128719]. But Gasper and Rahman's book is both denser and focused on q-orthogonal polynomials.

McLaughlin makes very different but equally valid choices of topics. The early chapters come in bite sizes with lots of exercises: the q-binomial theorem, fundamental transformation formulæ, Jacobi's triple product identity, Ramanujan's $_1\psi_1$ summation, Bailey's $_6\psi_6$ summation, and the Rogers–Fine identities. McLaughlin then moves into the heart of the book, Bailey pairs and Bailey chains, one of the essential tools for the exploration of q-series. The text finishes by tackling a selection of distinct topics shaped largely by the author's own interests, including q-trinomial coefficients, a short chapter on partitions and bijective proofs, an introduction to Lambert series, and a brief survey of mock theta functions.

There is a more extensive treatment of McLaughlin's first love, continued fractions. While, as McLaughlin explains in his introduction, it was Ramanujan's continued fraction

$$K(q) := 1 + \cfrac{q}{1 + \cfrac{q^2}{1 + \cfrac{q^3}{1 + \cfrac{q^4}{\ddots}}}}$$

that first drew him to the study of q-series, he never gets to the punchline, that Ramanujan used his product representation of this continued fraction to prove that

$$\frac{1}{K(e^{-2\pi})} = e^{2\pi/5}\left(\sqrt{\frac{5+\sqrt{5}}{2}} - \frac{\sqrt{5}+1}{2}\right),$$

one of two evaluations of K at special values that convinced Hardy that, even though he had no idea how to prove them, "they must be true because, if they were not true, no one would have had the imagination to invent them."

Of course, this evaluation relies on the theory of theta functions. A work such as this, intended as an introductory textbook, is necessarily circumscribed in its reach. But it does serve as a reminder that beyond this book lies a vast expanse of q-series that has barely been touched.

McLaughlin concludes with seven appendices, intended to serve as a reference. These complement the work of Gasper and Rahman by providing extensive lists of Bailey pairs and Bailey chains. McLaughlin has produced an admirable book, clearly and knowledgeably written, upon which one could build a challenging undergraduate seminar as well as a graduate course designed to lead toward today's research questions.

Reviewed by David M. Bressoud.

This work was originally published by the American Mathematical Society (AMS) as the review MR3752164 in *Mathematical Reviews/MathSciNet*. It is reprinted here by permission of the AMS.

Topic #8 ——— OP – SF Net 26.5 ——— September 15, 2019

From: OP-SF Net Editors
Subject: Report on: Minisymposium at ICIAM 2019 on *Multivariate OPs* by **Teresa E. Pérez**

Report by Teresa E. Pérez on the "Multivariate Orthogonal Polynomials: Theory and Applications" Minisymposium held at the International Congress on Industrial and Applied Mathematics (ICIAM 2019), Universidad de València, València, Spain.

ICIAM 2019 was celebrated from July 15–19, 2019 in València, Spain. This international macro-event is celebrated every four years, and it was the first time that it took place in Spain. On Monday July 15 at the Palacio de Congresos of València, King Felipe VI, of Spain, inaugurated ICIAM 2019. Consequently, all the national TV channels and journals dedicated some minutes and pages to inform people in general about this event. This was an interesting publicity campaign concerning Mathematics in Spain. It seems as though the public vision of Mathematics in Spain has been substantially improved because of ICIAM 2019.

At ICIAM 2019 València, there were a total of 34 invited talks: 27 invited speakers, 5 ICIAM prize winner lectures, the Olga Taussky–Todd lecture (Françoise Marie Louise Tisseur), and a Public Lecture (*Can Mathematics help in the war against cancer?* by Victor Pérez García). There were also approximately 300 thematic minisymposia, 25 industrial minisymposia, 800 contributed talks and 250 posters. These covered virtually all aspects of mathematical applications to science, engineering and industry. There was also an *Industry Day* held on Wednesday which included 14 talks by delegates of technology companies. Also, over 20 exhibitors attended ICIAM 2019 including scientific publishers, high technology companies, and research institutions.

The numbers of this event were really impressive: more than 4200 participants with over 200 volunteers from all of Spain. Because there were so many parallel sessions, talks, and organized activities, a special app for smartphones was developed specially for the Congress. During ICIAM 2019, we can say that València was invaded by Mathematicians from many different countries with orange badges around their necks.

Minisymposia at ICIAM 2019 were organized for two hour time periods each containing four talks. Paco Marcellán, Yuan Xu and myself organized a Minisymposium entitled "Multivariate Orthogonal Polynomials: Theory and Applications" which was scheduled for Wednesday July

17th. The aim of the Minisymposium was to provide a platform for researchers who work on multivariate orthogonal polynomials and related fields to report on recent progress and to exchange ideas. The talks also touched on applications in approximation, computation, and numerical integration.

Figure 1: *Multivariate Orthogonal Polynomials: Theory and Applications* Minisymposium held at ICIAM 2019

Our Minisymposium proposed two sessions with a total of eight talks. These talks were given by J. Brauchart from Technische Universität Graz, Germany; F. Dai from University of Alberta, Canada; S. Olver from Imperial College of London, UK; M. Piñar from Universidad de Granada, Spain; J. F. Van Diejen, from Universidad de Talca, Chile; C. Ferreira from Universidad de Zaragoza, Spain; I. Valero-Toranzo from Universidad Rey Juan Carlos, Spain; and Luc Vinet from Université de Montreal, Canada. All of the talks given in our Minisymposium had a very high scientific level, and several of them promoted interesting discussions between the participants.

In my opinion, our Minisymposium was a successful event. Note however that at (exactly) the same time as our Minisymposium, the organization team scheduled another interesting Minisymposium on the topic: "Orthogonal Polynomials: Theory, Computation, and Applications"! This minisymposium was organized by M. Pranic, M. Spelevic and L. Reichel. It included several very interesting talks that made several of the participants in our Minisymposium— interested in orthogonal polynomials—have to choose between both Minisymposia. I think this fact could have been be avoided by the ICIAM 2019 organization simply by taking into account that, in both Minisymposia titles, the words *Orthogonal Polynomials*, explicitly appear! Even Paco Marcellán, one of the organizers of our Minisymposium was also a speaker in the second Minisymposium. He had to miss some talks in his own session to give a talk in the second one.

After ICIAM 2019, I hope that ICIAM 2023, which will be held in Tokyo, Japan, will be as successful as València ICIAM 2019.

From: Ole Warnaar (o.warnaar@maths.uq.edu.au)
Subject: Report on: Conference on *Elliptic Integrable Systems* at Nordita by **Ole Warnaar**

Report by Ole Warnaar on the Elliptic Integrable systems, Special Functions and Quantum Field Theory Conference held at the Nordic Institute for Theoretical Physics (Nordita), Stockholm, Sweden.

From the 16th till the 20th of June 2019, Nordita, the Nordic Institute for Theoretical Physics, hosted the fifth installment of a series of international conferences devoted to the theory of elliptic hypergeometric functions and their applications to special functions, integrable systems and theoretical physics. Previous editions of the meeting were held at RIMS (2004), the Max Planck Institute for Mathematics (2008), the Lorentz Center (2013) and the Erwin Schrödinger Institute (2017).

Elliptic hypergeometric functions are a relatively new extension of ordinary and basic hypergeometric functions, that have seen a number of remarkable applications to integrable systems and quantum field theory in the past two decades. Elliptic analogues of beta and Selberg integrals, for example, are known to describe superconformal indices in four-dimensional quantum field theory—with many conjectural Seiberg type dualities manifesting themselves as integral transformations for elliptic beta integrals. Elliptic hypergeometric integrals may be interpreted as novel types of solutions to the celebrated Yang–Baxter equation from statistical mechanics, and play a key role in the generalisation of the Askey–Wilson and Koornwinder orthogonal polynomials to elliptic biorthogonal functions.

At the Nordita meeting, which was organised by Martin Hallnäs, Edwin Langmann and Hjalmar Rosengren, and sponsored by Nordita and the Swedish Science Research Council, over 50 experts in elliptic special functions, integrable systems and quantum field theory came together to present and discuss the latest developments in the field. Plenary talks were presented by

- Oleg Chalykh, University of Leeds, Leeds, UK
- Rinat Kashaev, University of Geneva, Geneva, Switzerland
- Oleg Lisovyy, LMPT, Tours, France
- Marta Mazzocco, University of Birmingham, Birmingham, UK
- Nobutaka Nakazono, Tokyo University of Agriculture and Technology, Tokyo, Japan
- Eric Rains, Caltech, Pasadena, USA
- Simon Ruijsenaars, University of Leeds, Leeds, UK
- Jun'ichi Shiraishi, University of Tokyo, Tokyo, Japan
- Vyacheslav Spiridonov, JINR, Dubna and NRU HSE, Moscow, Russia
- Alexander Varchenko, University of North Carolina at Chapel Hill, Chapel Hill, USA

with an additional 23 contributed talks and an open problems session rounding out the programme. Slides of many of the presentations may be found at:
https://agenda.albanova.se/conferenceDisplay.py?confId=6142.

Proceedings of the meeting, which are not restricted to participants of the meeting but are open to anyone with an interest in the field will be published in a special issue of SIGMA, see www.emis.de/journals/SIGMA/elliptic-integrable-systems.html for submission details.

Preliminary preparations are in place to hold the next conference in the series in Japan in 2022.

Figure 2: *Nordita meeting*

Topic #10 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Gergő Nemes (nemesgery@gmail.com)
Subject: Report on: OPSFA–15 at RISC in Hagenberg, Austria by **Gergő Nemes**

The 15th International Symposium on Orthogonal Polynomials, Special Functions and Applications (OPSFA–15) was held at the Research Institute for Symbolic Computation (RISC) in Hagenberg, Austria, from July 22 to July 26, 2019. OPSFA–15 was organised by RISC of the Johannes Kepler Universität Linz (JKU) and the Johann Radon Institute for Computational and Applied Mathematics (RICAM) of the Austrian Academy of Sciences (ÖAW). The conference had some 200 participants from all over the world.

Figure 3: *OPSFA-15 Group Photo* at RISC in Hagenberg, Austria

There were 9 plenary talks and 158 regular talks organised into 12 minisymposia running in parallel to each other and covering a vast range of topics, including (multiple) orthogonal polynomials, multivariate special functions, hypergeometric functions, symbolic computation, asymptotics, potential theory and q-series. There was also a poster session with 9 posters. On Sunday, July 21, a welcome reception was held in the Gemeindesaal (common hall) of the Castle of Hagenberg close to the conference venue, giving a great opportunity to

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meet fellow colleagues and old and new friends. On Wednesday afternoon, July 24, we were offered an exciting excursion to Freistadt, a small medieval town 20 km north of Hagenberg. Besides a guided tour through the delightful old town, we visited the Freistädter Brewery to learn about the art and history of beer brewing at the Bier–Akademie. We finished the day with the conference dinner, which took place in the restaurant Zum Goldenen Hirschen. On Thursday evening, July 25, Christian Krattenthaler gave a wonderful organ concert in the Church of Hagenberg, playing great compositions from several centuries.

The Gábor Szegő Prize was awarded to Thomas Bothner for his outstanding contributions to the field of Riemann–Hilbert problems. The OPSFA steering committee announced that the next OPSFA meeting will take place at the Université de Montréal, Montréal, Canada in 2021. Let me finish my short report by thanking the local organisers (Christoph Koutschan, Peter Paule, Ralf Hemmecke, Ali Uncu, Elaine Wong, Tanja Gutenbrunner and Ramona Oehme-Pöchinger) for their thorough and hard work in organising this conference which I enjoyed very much.

Topic #11 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Michael Schlosser (michael.schlosser@univie.ac.at)
Subject: Report on: OPSFA–15 at RISC in Hagenberg, Austria by **Michael Schlosser**

Report on the 15th International Symposium on Orthogonal Polynomials, Special Functions and Applications (OPSFA15), Hagenberg, Austria, July 22–26, 2019

The fifteenth OPSFA meeting was held in the fourth week of July 2019 in Hagenberg, Austria. It was organized by the Research Institute for Symbolic Computation (RISC) of the Johannes Kepler University Linz (JKU) and the Johann Radon Institute for Computational and Applied Mathematics (RICAM) of the Austrian Academy of Sciences (ÖAW).

Exactly 200 participants from all over the world gathered to report about new developments and exchange ideas related to the subjects of the symposium. The first official part of the meeting was the welcome reception on Sunday evening which was quite glamourous and took place in a community hall just next to the Castle of Hagenberg (the main location of RISC).

The scientific program extended from Monday morning through Friday early afternoon, Wednesday afternoon being free (but with the option to join an excursion, see below). Nine plenary speakers gave very fine talks, and a total of 158 contributed talks were given in the twelve minisymposia, held in parallel sessions over the five days of the meeting.

The plenary talks consisted of the following:
- Christian Krattenthaler: Chen Wang's proof of the Borwein conjecture
- Mikhail Sodin: Three tales from one pocket
- Alan Sokal: Coefficientwise Hankel–total positivity
- Veronika Pillwein: Orthogonal polynomials, special functions and algorithms
- Thomas Bothner: What is ... a Riemann–Hilbert problem?
- Luc Vinet: State revival in spin networks, graphs and orthogonal polynomials
- Irina Nenciu: On orthogonal polynomials and the long–time behaviour of completely integrable systems
- Armin Straub: Negative thinking and polynomial analogs
- Peter A. Clarkson: Rational solutions of Painlevé equations

Figure 4: Walter Van Assche presenting the Gábor Szegő Prize to Thomas Bothner. Photo taken by Christoph Koutschan.

Thomas Bothner, listed as an OPSFA-15 plenary speaker, was awarded the 2019 Gábor Szegő Prize by the SIAM Activity Group on Orthogonal Polynomials and Special Functions. After the ceremony where he was awarded the prize, he delivered the Gábor Szegő lecture. The Gábor Szegő Prize is awarded every two years at the OPSFA symposium to an early-career researcher for outstanding research contributions in the area of orthogonal polynomials and special functions.

Each of the twelve minisymposia (listed below) had several sessions:

- Orthogonal polynomials, special functions, and functional equations
- Hypergeometric functions
- Trends on orthogonal polynomials
- Multivariate special functions related to Lie algebras
- Multiple orthogonal polynomials and Hermite-Padé approximation
- Symbolic computation and special functions
- Recent trends in asymptotics
- Asymptotics via non-standard orthogonality
- Extremal polynomials and almost periodicity
- Potential theory and applications to orthogonal polynomials and minimal energy
- Developments in q-series and the theory of partitions
- General session for contributed talks

Some additional events were scheduled. These included a SIAM AG-OPSF business meeting on Monday, an open problems session on Tuesday, and a poster session on Wednesday. The social program, apart from the aforementioned welcome reception, consisted of two memorable cultural events:

- Wednesday afternoon: excursion to Freistadt (a medieval town close to the Czech border) with a guided tour of the town and a visit of one of its main attractions, the brewery, the day concluded in a restaurant by a banquet dinner with local specialties
- Thursday evening: an organ concert (in the church of Hagenberg, just next to the castle) by Christian Krattenthaler

Further, at least three events/announcements of Friday, the last day of the meeting, should be extra highlighted:

- Dick Askey, who personally could not attend the Symposium, was awarded a prize for lifetime achievement in Orthogonal Polynomials and Special Functions. In his absence, Mourad Ismail read a letter by Dick Askey to the present participants of the symposium, in which the latter thanked the Scientific Committee for the prize and expressed his view about the development of Special Functions.
  I personally recall that Dick recommended that in the future
    (i) multivariable extensions

and
  (ii) elliptic extensions
of special functions should be studied.

- Luc Vinet announced that the next OPSFA meeting (of 2021) would be held in Montreal, and he invited everyone in the community to attend it.
- The Proceedings of the Symposium will be published in a special issue of the journal Integral Transforms and Special Functions. The guest editors are Walter van Assche, Galina Filipuk, Christoph Koutschan, and Francisco Marcellán.

The symposium in Hagenberg was overall very well organized. Special thanks should go to the organizing committee, Christoph Koutschan and Peter Paule, and to their local helpers. They truly did a great job.

For more information on the Symposium, see the website:
https://www3.risc.jku.at/conferences/opsfa2019.

Topic #12 ——— OP – SF Net 26.5 ——— September 15, 2019

From: Walter Van Assche (walter.vanassche@kuleuven.be)
Subject: Report on: Richard Askey Lifetime Achievement Award by **Walter Van Assche**

The scientific committee of the 15th International Symposium on Orthogonal Polynomials, Special Functions and Applications OPSFA-15 have decided to award Richard Askey a Lifetime Achievement Award.

There was a short ceremony at the OPSFA conference on Friday July 26 where Kathy Driver and Mourad Ismail explained why Dick deserves this award. Unfortunately Dick was not able to attend the OPSFA meeting, but the award was handed over to him on September 15 during the AMS Fall Sectional Meeting in Madison, Wisconsin. To make up for Dick's absence, Diego Dominici had prepared an interview with Dick, and this interview was read before the audience at the OPSFA meeting. The full interview is presented below.

Q: What made you decide to start doing research on special functions?
Reading Widder's book *The Laplace Transform* as a senior at Washington University. My thesis looked at multiplier results for Jacobi polynomial series. At the University of Chicago, I met Steven Wainger, Eli Stein's first Ph.D. student, and we worked together

Figure 5: Richard Askey Lifetime Achievement Award. Photo taken by Christoph Koutschan.

on a number of problems, including two which Bochner had suggested to me. We did not solve all the problems we worked on, but it was the start of my work on special functions. There were gaps in what should be known, and no one else seemed to care.

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Q: What do you think is your most valuable contribution to special functions?

When I was working on special functions, a common question to me was "why are you doing this?". The subject was worked over in the 19th century and mathematics had gone beyond finding more messy identities. Those comments have dissipated. My main role in the revival of special functions was that I had the good fortune to know people from different backgrounds so I could share problems with people who had a reasonable chance to solve them. This encouraged other mathematicians to work in special functions.

Q: How did you catch the q-disease?

Two reasons. One was a paper by Wolfgang Hahn on the classical orthogonal polynomials at the Hahn polynomial level. The other was J. J. Seidel who visited Madison to discuss Jacobi polynomials. I mentioned that there had been recent work on Krawtchouk polynomials. He said he knew a lot about these polynomials and I asked what had led him to consider these polynomials. He said coding theory, and I asked "What is that?". After a short lesson, he mentioned a paper of Delsarte on q-Krawtchouk polynomials which also arose from coding theory. That decided me to invite George Andrews to spend a year in Madison so that we could use his knowledge of q-series and mine of orthogonal polynomials to fill in the missing details in Hahn's paper and see what else could be found.

Q: How important was Ramanujan for your research?

For about 15 years, I spent a lot of time reading Ramanujan's papers. From 1975, I taught a graduate course on special functions and I did not know enough about q-series to make them part of the course, because all I knew was formal manipulations. The visit of George Andrews fixed my lack of knowledge and some of what was done in the next few years was what might be described as low level Ramanujan work. When George Andrews and I started working on Hahn's paper, we used some sums and integrals Ramanujan have found.

Q: What is your favorite special function?

Jacobi polynomials.

Q: Could you comment on the role of the OPSFA meetings for the field's future?

This series of meetings has evolved along with some of the changes of interests in special functions, which illustrates important changes in technical areas. I found the meetings useful and would have found earlier meetings useful if there had been a wide enough group of papers of sufficient interest. Looking back in hindsight, it would have been possible to have started the meetings earlier, but it is unlikely that funding would have been available. I have two suggestions: several variables and going beyond polynomials to elliptic hypergeometric functions.

Q: Any final remarks?

I wish I had been able to attend this meeting, in order to thank many old friends for their help and friendship. To mention a few: George Andrews, Ranjan Roy, Dennis Stanton, Mourad Ismail, Mizan Rahman, George Gasper, Charles Dunkl, Jim Wilson, Tom Koornwinder, Erik Koelink, and many others. My new interest is math education. Hung-Hsi Wu and I do our best to try to keep each other sane in a very mixed up world.

Topic #13 ——— OP – SF Net 26.5 ——— September 15, 2019

From: OP-SF Net Editors
Subject: Preprints in arXiv.org

The following preprints related to the fields of orthogonal polynomials and special functions

were posted or cross-listed to one of the subcategories of arXiv.org during July and August 2019. This list has been separated into two categories.

OP-SF Net Subscriber E-Prints

http://arxiv.org/abs/1907.00044
Free-Fermion entanglement and orthogonal polynomials
Nicolas Crampé, Rafael I. Nepomechie, Luc Vinet

http://arxiv.org/abs/1907.00188
Theta Blocks
Valery Gritsenko, Nils-Peter Skoruppa, Don Zagier

http://arxiv.org/abs/1907.01236
Some q-series identities extending work of Andrews, Crippa, and Simon on sums of divisors functions
Kathrin Bringmann, Chris Jennings-Shaffer

http://arxiv.org/abs/1907.01438
Orbital Bifurcations and Shoaling of Cnoidal Waves
Blagoje Oblak

http://arxiv.org/abs/1907.01604
Zero Spacings of Paraorthogonal Polynomials on the Unit Circle
Brian Simanek

http://arxiv.org/abs/1907.01812
Asymptotic expoansions of mathieu-Bessel series. I
R. B. Paris

http://arxiv.org/abs/1907.02460
A periodic hexagon tiling model and non-Hermitian orthogonal polynomials
Christophe Charlier, Maurice Duits, Arno B.J. Kuijlaars, Jonatan Lenells

http://arxiv.org/abs/1907.03002
Nikishin systems on star-like sets: Ratio asymptotic formulae for the associated multiple orthogonal polynomials
Abey López-García, Guillermo López Lagomasino

http://arxiv.org/abs/1907.03067
Long-time asymptotic behavior for an extended modified Korteweg-de Vries equation
Nan Liu, Boling Guo, Deng-Shan Wang, Yufeng Wang

http://arxiv.org/abs/1907.03156
Riemann-Hilbert Problem for the Matrix Laguerre Biorthogonal Polynomials: Eigenvalue Problems and the Matrix Discrete Painlevé IV
Amilcar Branquinho, Ana Foulquié Moreno, Manuel Mañas

http://arxiv.org/abs/1907.03640
Some classes of generating functions for generalized Hermite- and Chebyshev-type polynomials: Analysis of Euler's formula
Neslihan Kilar, Yilmaz Simsek

http://arxiv.org/abs/1907.03650
Analogue of a Fock-type integral arising from electromagnetism and its applications in number theory
Atul Dixit, Arindam Roy

http://arxiv.org/abs/1907.03683
Christoffel deformations of discrete ensembles related to random partitions
Pierre Lazag

http://arxiv.org/abs/1907.04280
Revisiting Biorthogonal Polynomials. An LU factorization discussion
Manuel Mañas

http://arxiv.org/abs/1907.04597
The Fox-Wright function near the singularity and branch cut
Dmitrii Karp, Elena Prilepkina

http://arxiv.org/abs/1907.04631
Connections between vector-valued and highest weight Jack and Macdonald polynomials
Laura Colmenarejo, Charles F. Dunkl, Jean-Gabriel Luque

http://arxiv.org/abs/1907.04729
Fractional Revival and Association Schemes
Ada Chan, Gabriel Coutinho, Christino Tamon, Luc Vinet, Hanmeng Zhan

http://arxiv.org/abs/1907.04803
New fifth and seventh order mock theta function identities
Frank Garvan

http://arxiv.org/abs/1907.05942
The spectral matrices associated with the stochastic Darboux transformations of random walks on the integers
Manuel D. de la Iglesia, Claudia Juarez

http://arxiv.org/abs/1907.06122
Improved Bounds for Hermite-Hadamard Inequalities in Higher Dimensions
Thomas Beck, Barbara Brandolini, Krzysztof Burdzy, Antoine Henrot, Jeffrey J. Langford, Simon Larson, Robert G. Smits, Stefan Steinerberger

http://arxiv.org/abs/1907.07447
Ladder relations for a class of matrix valued orthogonal polynomials
Alfredo Deaño, Bruno Eijsvoogel, Pablo Román

http://arxiv.org/abs/1907.07814
Gončarov Polynomials in Partition Lattices and Exponential Families
Ayomikun Adeniran, Catherine Yan

http://arxiv.org/abs/1907.08108
Spectral curves, variational problems, and the hermitian matrix model with external source
Andrei Martínez-Finkelshtein, Guilherme L. F. Silva

http://arxiv.org/abs/1907.08286
Non-homogeneous wave equation on a cone
Sheehan Olver, Yuan Xu

http://arxiv.org/abs/1907.09023
A Wasserstein Inequality and Minimal Green Energy on Compact Manifolds
Stefan Steinerberger

http://arxiv.org/abs/1907.09130
A tutorial for the MAPLE ETA package
Frank Garvan

http://arxiv.org/abs/1907.09132
Using Symbolic Computation to analyze some Children's Board Games
Shalosh B. Ekhad, Doron Zeilberger

http://arxiv.org/abs/1907.09391
Polynomial Reduction and Super Congruences
Qing-Hu Hou, Yan-Ping Mu, Doron Zeilberger

http://arxiv.org/abs/1907.09872
The alternating central extension for the positive part of $U_q(\widehat{\mathfrak{sl}}_2)$
Paul Terwilliger

http://arxiv.org/abs/1907.12143
Repeated derivatives of tanh, sech, ... and associated polynomials
Giuseppe Dattoli, Silvia Licciardi, Rosa Maria Pidatella, Elio Sabia

http://arxiv.org/abs/1908.00736
The distribution function for the maximal height of N non-intersecting Bessel paths
Dan Dai, Luming Yao

http://arxiv.org/abs/1908.01026
Combinatorics of periodic ellipsoidal billiards
George E. Andrews, Vladimir Dragovic, Milena Radnovic

http://arxiv.org/abs/1908.01084
Eulerian polynomials and excedance statistics
Bin Han, Jianxi Mao, Jiang Zeng

http://arxiv.org/abs/1908.01392
Discrete Kontorovich-Lebedev transforms
Semyon Yakubovich

http://arxiv.org/abs/1908.01532
On integrals of the tronquée solutions and the associated Hamiltonians for the Painlevé II equation
Dan Dai, Shuai-Xia Xu, Lun Zhang

http://arxiv.org/abs/1908.02234
The Variance of the Number of Zeros for Complex Random Polynomials Spanned by OPUC
Aaron M. Yeager

http://arxiv.org/abs/1908.03207
Some homogeneous q-difference operators and the associated generalized Hahn polynomials
Hari M. Srivastava, Sama Arjika, Abey Sherif Kelil

http://arxiv.org/abs/1908.03333
On Entry II.16.12: A continued fraction of Ramanujan
Gaurav Bhatnagar, Mourad E. H. Ismail

http://arxiv.org/abs/1908.03912
Bijective recurrences concerning two Schröder triangles
Shishuo Fu, Yaling Wang

http://arxiv.org/abs/1908.04160
Operational vs. Umbral Methods and Borel Transform
Giuseppe Dattoli, Silvia Licciardi

http://arxiv.org/abs/1908.04540
Differential equations for the recurrence coefficients limits for multiple orthogonal polynomials from a Nevai class
Alexander I. Aptekarev, Rostyslav Kozhan

http://arxiv.org/abs/1908.04963
Linear Differential Equations for the Resolvents of the Classical Matrix Ensembles
Anas A. Rahman, Peter J. Forrester

http://arxiv.org/abs/1908.05708
Large n limit for the product of two coupled random matrices
Guilherme L. F. Silva, Lun Zhang

http://arxiv.org/abs/1908.06587
Some identities of type 2 Degenerate Bernoulli polynomials of the second kind
Taekyun Kim, Lee-Chae jang, Dae San Kim, Han-Young Kim

http://arxiv.org/abs/1908.06737
On the spacing of zeros of paraorthogonal polynomials for singular measures
Jonathan Breuer, Eyal Seelig

http://arxiv.org/abs/1908.11009
On type 2 degenerate Bernoulli and Euler polynomials of complex variable
Taekyun Kim, Dae san Kim, Lee-Chae Jang, Han-Young Kim

http://arxiv.org/abs/1908.11228
Positive-definite Functions, Exponential Sums and the Greedy Algorithm: a curious Phenomenon
Louis Brown, Stefan Steinerberger

http://arxiv.org/abs/1908.11803
Degenerate hypergeometric functions and degenerate hypergeometric numbers of order p
Taekyun Kim, Dae San Kim, Hyunseok Lee

Other Relevant OP-SF E-Prints

http://arxiv.org/abs/1907.00711
On certain q-trigonometric identities
Bing He

http://arxiv.org/abs/1907.01281
Groups, Special Functions and Rigged Hilbert Spaces
E. Celeghini, M. Gadella, M. A. del Olmo

http://arxiv.org/abs/1907.01324
A new Painleve-integrable equation possessing KdV-type solitons
Sergei Sakovich

http://arxiv.org/abs/1907.01634
On some P-Q mixed modular equations of degree 5
M. S. Mahadeva Naika, S. Chandankumar, M. Harish

http://arxiv.org/abs/1907.01832
Spectral zeta functions
Anders Karlsson

http://arxiv.org/abs/1907.01935
Finite and symmetric colored multiple zeta values and multiple harmonic q-series at roots of unity
Koji Tasaka

http://arxiv.org/abs/1907.01948
On uniqueness and nonuniqueness for potential reconstruction in quantum fields from one measurement II. the non-radial case
Zhi-Qiang Miao, Guang-Hui Zheng

http://arxiv.org/abs/1907.02539
Vector Colorings of Random, Ramanujan, and Large-Girth Irregular Graphs
Jess Banks, Luca Trevisan

http://arxiv.org/abs/1907.02553
The Newton integral and the Stirling formula
Martin Klazar

http://arxiv.org/abs/1907.02635
The number of rooted forests in circulant graphs
L.A. Grunwald, I.A. Mednykh

http://arxiv.org/abs/1907.02722
Mixed Hodge numbers and factorial ratios
Fernando Rodriguez Villegas

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Period functions associated to real-analytic modular forms
Nikolaos Diamantis, Joshua Drewitt

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A new family of series expansions for $1/\pi$ and a binomial identity
J. Sesma

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David Damanik, Benjamin Eichinger, Peter Yuditskii

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Jingwei Guo, Wolfgang Müller, Weiwei Wang, Zuoqin Wang

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Estimates of the asymptotic Nikolskii constants for spherical polynomials
Feng Dai, Dmitry Gorbachev, Sergey Tikhonov

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Danil Krotkov

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On a q-analog of a singularly perturbed problem of irregular type with two complex time variables
Alberto Lastra, Stéphane Malek

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Enumerating path diagrams in connection with q-tangent and q-secant numbers
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The Shintani double zeta functions
Henry H. Kim, Masao Tsuzuki, Satoshi Wakatsuki

http://arxiv.org/abs/1907.04551
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Hafiz Muhammad Fahad, Mujeeb ur Rehman, Maham Siddiqi

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Matrix model generating function for quantum weighted Hurwitz numbers
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http://arxiv.org/abs/1907.06706
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Ground states for a doubly nonlinear Schrödinger equation in dimension one
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Bivariate Bernstein-gamma functions and moments of exponential functionals of subordinators
Adam Barker, Mladen Savov

http://arxiv.org/abs/1907.07968
Rectangular summation of multiple Fourier series and multi-parametric capacity
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http://arxiv.org/abs/1907.08026
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http://arxiv.org/abs/1907.08353
An extension of the Andrews-Warnaar partial theta function identity
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http://arxiv.org/abs/1907.08492
A Hermite-like basis for faster matrix-free evaluation of interior penalty discontinuous Galerkin operators
Martin Kronbichler, Katharina Kormann, Niklas Fehn, Peter Munch, Julius Witte

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Masanobu Kaneko, Hideki Murahara, Takuya Murakami

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Mario DeFranco

http://arxiv.org/abs/1907.09039
Critical Thresholds in One Dimensional Damped Euler-Poisson Systems
Manas Bhatnagar, Hailiang Liu

http://arxiv.org/abs/1907.09307
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http://arxiv.org/abs/1907.09784
Connecting optimization with spectral analysis of tri-diagonal Hankel matrices
Jean-Bernard Lasserre

http://arxiv.org/abs/1907.09792
On vector and matrix Riemann-Hilbert problems for KdV shock waves
Iryna Egorova, Mateusz Piorkowski, Gerald Teschl

http://arxiv.org/abs/1907.09856
On the shapes of bilateral Gamma densities
Uwe Küchler, Stefan Tappe

http://arxiv.org/abs/1907.09857
Bilateral Gamma distributions and processes in financial mathematics
Uwe Küchler, Stefan Tappe

http://arxiv.org/abs/1907.09938
Elliptic functions from $F(\frac{1}{3}, \frac{2}{3}; \frac{1}{2}; \bullet)$
P.L. Robinson

http://arxiv.org/abs/1907.10214
Eigenvalues for the Minors of Wigner Matrices
Jiaoyang Huang

http://arxiv.org/abs/1907.10390
Dwork crystals II
Frits Beukers, Masha Vlasenko

http://arxiv.org/abs/1907.10511
Green's functions, Biot-Savart Operators and Linking Numbers on Negatively Curved Symmetric Spaces
Stefan Bechtluft-Sachs, Evangelia Samiou

http://arxiv.org/abs/1907.10744
A Unified generalization of real, Gould-Hopper, 1-d and 2-d holomorphic, and polyanalytic Hermite Polynomials
Allal Ghanmi, Khalil Lamsaf

http://arxiv.org/abs/1907.11041
Two-point connectivity of two-dimensional critical Q-Potts random clusters on the torus
Nina Javerzat, Marco Picco, Raoul Santachiara

http://arxiv.org/abs/1907.11153
Dynamic inverse problem for special system associated with Jacobi matrices and classical moment problems
Alexander Mikhaylov, Victor Mikhaylov

http://arxiv.org/abs/1907.11476
Positive definite radial kernels on homogeneous trees and products
Ignacio Vergara

http://arxiv.org/abs/1907.11509
Gap probability of the circular unitary ensemble with a Fisher-Hartwig singularity and the coupled Painlevé V system
Shuai-Xia Xu, Yu-Qiu Zhao

http://arxiv.org/abs/1907.11545
Nonlinear Pseudo-Differential Equations for Radial Real Functions on a Non-Archimedean Field
Anatoly N. Kochubei

http://arxiv.org/abs/1907.11592
Position-dependent mass charged particles in magnetic and Aharonov-Bohm flux fields: separability, exact and conditionally exact solvability
Zeinab Algadhi, Omar Mustafa

http://arxiv.org/abs/1907.11796
Positive level, negative level and level zero
Finn McGlade, Arun Ram, Yaping Yang

http://arxiv.org/abs/1907.11841
The Elliptic Tail Kernel
Cesar Cuenca, Vadim Gorin, Grigori Olshanski

http://arxiv.org/abs/1907.12095
A Probabilistic Proof of a Wallis-type Formula for the Gamma Function
Wooyoung Chin

http://arxiv.org/abs/1907.12218
Exactly Solvable Discrete Quantum Mechanical Systems and Multi-indexed Orthogonal Polynomials of the Continuous Hahn and Meixner-Pollaczek Types
Satoru Odake

http://arxiv.org/abs/1907.12243
Rational Approximation and Sobolev-type Orthogonality
Abel Díaz-González, Héctor Pijeira-Cabrera, Ignacio Pérez-Yzquierdo

http://arxiv.org/abs/1907.12267
Beta Laguerre ensembles in global regime
Hoang Dung Trinh, Khanh Duy Trinh

http://arxiv.org/abs/1907.12373
Useful review on the Exponential-Integral special function
Enrico Masina

http://arxiv.org/abs/1907.12465
Analysis and combinatorics of partition zeta functions
Robert Schneider, Andrew V. Sills

http://arxiv.org/abs/1907.12492
Sharp lower bounds for the Widom factors on the real line
Gökalp Alpan, Maxim Zinchenko

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Elliptic functions from $F(\frac{1}{4}, \frac{3}{4}; \frac{1}{2}; \bullet)$
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Marc Fersztand, Benjamin Gourevitch, Arnaud Rippol, Rubing Shen, Ian-Christopher Tanoh,
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Nayandeep Deka Baruah, Nilufar Mana Begum

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Michel L. Lapidus, Goran Radunović, Darko Žubrinić

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Jonathan D. Hauenstein, Ali Mohammad-Nezhad, Tingting Tang, Tamas Terlaky

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Pengbo Xu, Weihua Deng, Trifce Sandev

Topic #14 ———— OP – SF Net 26.5 ———— September 15, 2019

From: OP-SF Net Editors
Subject: Submitting contributions to OP-SF NET and SIAM-OPSF (OP-SF Talk)

To contribute a news item to OP-SF NET, send e-mail to one of the OP-SF Editors
howard.cohl@nist.gov, or spost@hawaii.edu.

Contributions to OP-SF NET 26.6 should be sent by November 1, 2019.

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 (2017-2019) are:
    Walter Van Assche, Chair
    Andrei Martínez-Finkelshtein, Vice Chair
    Sarah Post, Program Director
    Yuan Xu, 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 #15 ——— OP – SF Net 26.5 ——— September 15, 2019

From: OP-SF Net Editors
Subject: Thought of the Month by **Henry van Dyke** or **Elizabeth Charles**

Use whatever talent you possess.
The woods would be very silent if no birds sang there except those that sang best.

attributed to **Henry van Dyke, Jr.** (1852-1933), Novelist
NB: The OP-SF Net Editors were unable to identify the original source.

Dear Jean, the woods would be very silent if no bird sang but those that sing best.

Elizabeth (Rundle) Charles (1828-1896), English Writer, taken from *The Two Vocations; or, the; Sisters of Mercy at Home. A Tale*, James Nisbet and Co., London, 1852, p. 34.

Contributed by Kathy Driver.