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Topics:
1. Announcement: *Discrete Painlevé Equations* book by Nalini Joshi
2. Announcement: Special Issue of SIGMA on *Elliptic Integrable Systems*
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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
OPSFASummerSchool2020
Radboud University, Nijmegen, The Netherlands

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),
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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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: OPSFASummerSchool2020 in Nijmegen, The Netherlands

OPSFASummerSchool2020
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 OPSFASummer-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)
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 nearby 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


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.


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 formulae, 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

\[
K(q) := 1 + \frac{q}{1 + \frac{q^2}{1 + \frac{q^4}{1 + \ldots}}}
\]

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

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

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


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.

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

The 15\textsuperscript{th} 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.

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
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 glamorous 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
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 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.

![Figure 5: Richard Askey Lifetime Achievement Award. Photo taken by Christoph Koutschan.](image)
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 back-
grounds 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 miss-
ing 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 use-
ful 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.
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.

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Infinite Summation Formulas Involving Riemann–Zeta function
Xiaoxia Wang, Xueying Yuan

The asymptotic number of zeros of exponential sums in critical strips
J. Heittokangas, Z.–T. Wen

Asymptotically best possible Lebesque–type inequalities for the Fourier sums on sets of generalized Poisson integrals
Anatoly Serdyuk, Tetiana Stepaniuk

On a new parameter involving Ramanujan’s theta–functions
S. Chandankumar, H. S. Sumanth Bharadwaj
Fast Nonlinear Fourier Transform using Chebyshev Polynomials
Vishal Vaibhav

On some geometric properties and Hardy class of \( q \)-Bessel functions
İbrahim Aktaş

On computing the nonlinearity interval in parametric semidefinite optimization
Jonathan D. Hauenstein, Ali Mohammad-Nezhad, Tingting Tang, Tamas Terlaky

Bivariate poly-analytic Hermite polynomials
Allal Ghanmi, Khalil Lamsaf

Some martingales associated with multivariate Bessel processes
Miklos Kornyik, Michael Voit, Jeannette H.C. Woerner

Independence Polynomials and Hypergeometric Series
Danylo Radchenko, Fernando Rodriguez Villegas

Some martingales associated with multivariate Jacobi processes and Aomoto’s Selberg integral
Michael Voit

Discrete multiple orthogonal polynomials on shifted lattices
Alexander Dyachenko, Vladimir Lysov

Properties of Generalized Bessel Functions
Parker Kuklinski, David A. Hague

Lévy walk revisited: Hermite polynomial expansion approach
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: http://math.nist.gov/opsf
Information on joining SIAM and this activity group: service@siam.org

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.