Orthogonal Polynomials and Special Functions

SIAM Activity Group on Orthogonal Polynomials and Special Functions

★ ★ ★ ★ **Newsletter** ★ ★ ★ ★

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Contents

From the Editors

This is the last issue of the Newsletter for this year, the World Mathematical Year. In this issue there is and interesting letter form the Chair containing some comments and ideas for the future of the Group. As usual a lot of material comes from the OP-SF Net, and this time a new problem have been submitted. We hope you enjoy this issue and remind you that you can contribute sending your own items to one of the editors.

October 1, 2000

Renato Álvarez-Nodarse
(ran@cica.es)

Rafael J. Yáñez
(ryanez@ugr.es)

Message from the Chair

In this letter to the OPSF membership I want to report on some recent developments at SIAM that affect all the SIAGs (SIAM Activity Groups) and ours in particular. Then I will give a brief report on the SIAM Annual Meeting, which was held in San Juan, Puerto Rico. Finally I will raise some issues faced by our Activity Group and ask for ideas for addressing them.

To begin, this was the year for our charter to be considered for renewal by the SIAM Council and the SIAM Board of Trustees. Activity group charter renewal is required every three years. I submitted the application, which was considered and approved at the Annual Meeting. Thus we are in business until the end of 2004. Officers who will lead our group starting on January 1, 2002, will be elected by the membership next year. It is not too soon to begin thinking about candidates, and to think about being a candidate yourself.

Jim Crowley, Executive Director of SIAM, sent an email

SIAM Activity Group
on
Orthogonal Polynomials and Special Functions
`http://math.nist.gov/opsf`

△

Elected Officers

DANIEL W. LOZIER, *Chair*
WALTER VAN ASSCHE, *Vice Chair*
FRANCISCO MARCELLÁN, *Program Director*
CHARLES DUNKL, *Secretary*

Appointed Officers

RENATO ÁLVAREZ-NODARSE, *Co-Editor of the Newsletter*
RAFAEL J. YÁÑEZ, *Co-Editor of the Newsletter*
MARTIN E. MULDOON, *Editor of the OP-SF Net*
BONITA SAUNDERS, *Webmaster*

△

THE PURPOSE *of the Activity Group is*

—to promote basic research in orthogonal polynomials and special functions; to further the application of this subject in other parts of mathematics, and in science and industry; and to encourage and support the exchange of information, ideas, and techniques between workers in this field, and other mathematicians and scientists.

to all SIAG officers reporting two actions taken by SIAM at the Annual Meeting that affect the SIAGS. The first action is a request that all SIAGs organize at least two minisymposia at each Annual Meeting. This reaffirms previous requests and reflects the importance SIAM places on the activities of the SIAGs. There is a desire, in Jim's words, "to see the SIAGs participate fully as part of SIAM and not become entirely separate entities." The second action is new. It requests a meeting of the chairs of all the SIAGs at each Annual Meeting to discuss issues facing the SIAGs and to seek ways of vitalizing each SIAG. Jim will conduct the first SIAG Chairs Meeting at the 2001 SIAM Annual Meeting in San Diego. I expect to attend and represent our membership at this meeting.

Jim's email covered other issues of interest to SIAG officers and potential officers. New or revised documents for SIAG officers are being prepared, including SIAG Rules of Procedure, SIAG Guidelines, Guidelines for Organizing a SIAG Conference, and the charter renewal template. Finally Jim's email commented that every SIAG should maintain a set of Web pages. Any member who is interested in more information about these topics should contact me.

Our group had a minisymposium at the San Juan meeting but, unfortunately, it was not well attended. Of course there were many competing parallel sessions. But one of our four talks was cancelled due to a last-minute problem that prevented the speaker from traveling to San Juan, and another attracted no audience at all! One reason for the poor attendance might be that our talks didn't adhere to a coherent theme. It didn't help that among the plenary talks only one, the Polya Prize Lecture on Polynomials in Discrete Mathematics, had anything to do with our subject. Finally, the 3rd European Congress of Mathematics took place in Barcelona the same week as the SIAM Annual Meeting. Though it was a general mathematics meeting, a satellite Summer School on Orthogonal Polynomials and Special Functions was held shortly afterward. This summer school was an official activity of our group, organized by our program director, Paco Marcellan, and one of our newsletter editors, Renato Alvarez-Nodarse. I believe the European meeting and summer school drew heavily from the attendance we would have expected in San Juan.

This leads me to the major issue I see facing our group. We are part of SIAM, and SIAM rightly expects us to participate in SIAM meetings, to organize parts of these meetings, and even to consider mounting our own SIAG conference. In my view our group has met these expectations quite well, except for conducting our own conference, which we have never done. There are two general problems that prevent us from having a stronger relationship with SIAM. First, SIAM's commitment to special functions is not as strong as it should be. One indication of this is the lack of plenary speakers who work in special functions or who use them in other areas. I discussed this problem with several people in San Juan, and came away with the feeling that we could do more to influence the program of future SIAM meetings by communicating directly with the program committees. Another problem is the drift away from classical analysis on the editorial board of the SIAM Journal on Mathematical Analysis. This was addressed in the "Statement by the Officers of SIAM SIAG-OPSF on the Scope of SIMA" in Topic # 7, OPSF-NET 7.3, May 15, 2000, and in the printed OPSF Newsletter, vol. 10, no. 3, June 2000, p. 22. I am not aware of any progress on this problem. Second, there are many meetings that focus sharply on special functions. Are there too many? I invite the membership to think about our relationship with SIAM and how it could be strengthened. Our email list service, OPSF-Talk, is ideal for this purpose. It distributes email sent to opsftalk@nist.gov to the subscriber list, and it keeps an archive of the email. See `http://math.nist.gov/opsf/opsftalk.html` for further information about this service. Of course I will also be happy to receive comments by email, telephone or letter.

Daniel Lozier
(dlozier@nist.gov)

Reports from Meetings and Conferences

1. SIAG Summer School on Orthogonal Polynomials and Special Functions. Laredo, Spain, July 24-29, 2000.

From July 24th to 28th 2000, Renato Álvarez-Nodarse, Francisco Marcellán, Walter Van Assche and Rafael Yáñez organized the first SIAG OP-SF Summer School 2000 on Orthogonal Polynomials and Special Functions in Laredo, Spain. The program consisted of five courses of four hours each, together with two afternoons of short presentations in which the participants could report on their research. In total there were about 55 participants, of which the majority (about 34) came from Spain.

The central theme of the courses was the theory of orthogonal polynomials. Each course had its own characteristic approach to the subject. The combination of courses gave a very nice impression of the various modern aspects and interests in this broad research field. Antonio Duran gave a nice introductory course on matrix orthogonal polynomials, in which he explained the extension of various important properties of scalar orthogonal polynomials to the setting of matrix orthogonal polynomials. Ken McLaughlin gave a very stimulating lecture series, in which he explained the connections between Riemann-Hilbert problems and asymptotics of orthogonal polynomials. Jürgen Prestin lectured on polynomial wavelets, in which orthogonal polynomials are used to construct and study wavelets in polynomial spaces. Erik Koelink gave a course on the spectral analytic approach to the theory of special functions, emphasizing the nice applications to indeterminate moment problems, as well as applications to special functions associated with doubly infinite Jacobi matrices. Finally, Jasper Stokman's course gave an introduction to the theory of multivariable orthogonal polynomials, emphasizing both the connection with the theory of one-variable orthogonal polynomials and the representation theory of affine Hecke algebras.

The courses of the two undersigned were accompanied by detailed lecture notes. The sheets and the lecturer's personal notes for the courses of Antonio Duran and Ken McLaughlin were handed out to the participants. More extensive notes of all the courses will appear soon in a book to be published by Nova Science Publishers.

The summer school was held in Laredo, a very pleasant village on the Atlantic coast between Santander and Bilbao. The climate was amazingly moderate for the time of the year, with daily temperatures around 22 degrees centigrade, and about four hours sunshine each day: perfect for a summer-school! Hotel Cosmopol, where the lecturers and most of the applicants stayed, was excellent.

The pleasant surroundings soon led to various off-schedule activities by the participants, as well as the organizers and lecturers. To name a few: Francisco Marcellán and Renato Álvarez-Nodarse organized a group who went jogging on the beach daily. Your reporters joined the group at a certain point, despite the fact that their "running-days" have been over for quite some time. The runs were tough, but very pleasant, and soon we decided to keep on jogging back home, even to participate in organized runs in Holland! But back in everyday reality, and especially without the inspiring presence of Paco Marcellán, our good intentions have disappeared into thin air.

The rumour reached us that some participants found a completely different kind of off-schedule activity: bars and dancing-clubs stayed open throughout the night, and it seemed that some participants enjoyed night-life until sun-rise...–in contrast to the present writers, who regularly entered an almost completely deserted bar with extremely loud music in the evening to play pool, but returned to the hotel before the serious night activities started!

We enjoyed this well-organized summer school very much. The organizers did an excellent job, which led to a pleasant atmosphere and a good and well-balanced series of lectures. We sincerely hope that the participants also feel that the summer school has been worthwhile, mathematically as well as socially! Let's hope that the next OPSF summer school in Germany will be as successful!

Jasper Stokman
(jstokman@wins.uva.nl)
Erik Koelink
(koelink@twi.tudelft.nl)

Forthcoming Meetings and Conferences

1. q-Series with Applications to Combinatorics, Number Theory and Physics. University of Illinois at Urbana-Champaign, October 26-28, 2000

This information is taken from the WWW

`http://www.math.wisc.edu/~ono/qseries.html`

Confirmed Plenary Speakers:

- Scott Ahlgren (Colgate University)
- George Andrews (Penn State University)
- Richard Askey (University of Wisconsin)
- Anne Schilling (MIT)
- Dennis Stanton (University of Minnesota)

Special Note: Some of the plenary lectures will highlight open problems and future trends.

Invited Speakers:

- Krishnaswami Alladi (University of Florida)
- Douglas Bowman (University of Illinois)
- Youn-Seo Choi (Korea Institute for Advanced Study)
- Thomas Ernst (Uppsala University)
- Tina Garrett (University of Minnesota)
- Frank Garvan (University of Florida)
- George Gasper (Northwestern University)
- Christian Krattenthaler (University of Vienna)
- Jeremy Lovejoy (University of Wisconsin)
- Steve Milne (Ohio State University)
- Katsuhisa Mimachi (Kyushu University)
- Morris Newman (University of California, Santa Barbara)
- Peter Paule (University of Linz)
- Sasha Polishchuk (Boston University)
- Sergei Suslov (Arizona State University)
- Ole Warnaar (Melbourne University)
- Sander Zwegers (University of Utrecht)

Contributed Talks

- David Bradley (University of Maine, Orono)
- Matthew Boylan (University of Wisconsin)
- Shaun Cooper (University of Minnesota)
- Sylvie Corteel (Universite de Versailles)
- Larry Ericksen
- Yasushi Kajihara (Kobe University)
- Louis Kolitsch (University of Tennessee at Martin)
- Zhi Guo Liu (Xinxiang University)
- Richard McIntosh (University of Regina)
- David Penniston (Furman University)
- Axel Riese (University of Linz)
- Neville Robbins (San Francisco State University)
- Michael Schlosser (Ohio State University)
- Slobodan Trickovic (Nis University, Yuogslavia)
- Jan Felipe van Diejen (Universidad Chile)
- Ae Ja Yee (KAIST, Korea)

Schedule of Events

- October 26, 2000 Conference Banquet (site to be determined)
- October 27, 2000 Concert by C. Krattenthaler (Levis Faculty Center)
- October 28, 2000 Party (Home of Bruce and Helen Berndt).

Registration: Fill out the Registration form (see below) with checks made payable to the University of Illinois, and return them to:

Bruce Berndt
Department of Mathematics
1409 W. Green Street
University of Illinois
Urbana, Illinois 61801

Registration Form: For the registration please send the following data: Name, Address, Email address, Fees (Regular Registration: $30 before October 15, 2000, and $50 after October 15, 2000., Student Registration: $15., Banquet: $20 per person.) , Registration Fee, Banquet Charge, Total amount. (Please indicate any special considerations, such as dietary restrictions or physical impairments.)

Travel: If you travel by air, we recommend that you book your flights into Champaign, Illinois. The Champaign Airport is relatively small, but it is conveniently located (a 15 minute drive to campus) and is served by four major airlines: American Airlines, Northwest Airlines, TWA and US Airways. The closest major airports are in Indianapolis (2 hours by car), Chicago (3 hours by car) and St. Louis (3 hours by car). If you decide to book your flight to one of these cities, we recommend that you rent a car at the airport and drive to Champaign, as public transportation between these cities and Champaign is not very convenient.

Visa Information:

Visa Types: The two main types of short term visas are B-1 and B-2. The B-1 visa is for business travel, while the B-2 visa is intended for tourist visits. Conference participants who require a visa and who expect to receive partial support for travel expenses must obtain a B-1 Business

visa. Make sure that B-1 Business is indicated on your I-94 card. The University is not allowed to pay participants who have entered the US on a B-2 visa or a B-1 Tourist visa.

Visa Waivers: Visas are not necessary for participants from countries covered by the visa waiver program (which include most European countries, Australia and Japan). Visitors from those countries will be issued a visa waiver when passing through US Customs and Immigration. The waiver will be one of two forms: WB or WT. Participants expecting to receive partial support for travel expenses must obtain a WB waiver. The University is not allowed to pay participants who have entered the US on a WT waiver.

Conference Proceedings: We might publish a proceedings of this conference. Papers must be submitted by January 1, 2001.

Funding: Due to generous support from the David and Lucile Packard Foundation, the National Science Foundation and the Number Theory Foundation, financial support is available to a limited number of participants with some preference given to graduate students and new PhD's. To apply for this support, send e-mail to `ono@math.wisc.edu` by September 1, 2000.

Scientific Organizers: Bruce Berndt and Ken Ono

Rafael J. Yáñez
(ryanez@ugr.es)

2. Second Announcement of the 4th International Interdisciplinary Meetingon "Symmetries and Integrability of Difference Equations", Tokyo (Japan), November 27-December 1, 2000

The SIDE meetings are intended to provide a point of contact between researchers of various disciplines, all working or using methods from discrete systems, i.e. systems that can be described by ordinary or partial difference equations. This domain forms the core of a great variety of fields, including classical and quantum physics, computer science, mathematical biology, economics, numerical analysis, discrete geometry, and so on.

This series of international meetings started in 1994: the first Symmetries and Integrability of Difference Equations (SIDE) meeting was held in Esterel, Quebec (near Montreal - Canada). The second meeting took place in 1996 at the University of Kent in Canterbury (UK). The third meeting was held in 1998 at Sabaudia near Rome (Italy).

Proceedings of the SIDE meetings have been published as follows: "Symmetries and Integrability of Difference Equations", edited by D.Levi, L.Vinet and P.Winternitz, AMS 1996 [SIDE I], and "Symmetries and Integrability of Difference Equations", edited by P. Clarkson and F. Nijhoff, London Mathematical Society Lecture Note Series 255, Cambridge 1998 [SIDE II] and "Symmetries and Integrability of Difference Equations", edited by D. Levi and O. Ragnisco, CRM Proceedings and Lecture Notes Series. Vol. 25, American Mathematical Society [SIDE III].

The main topics of the present meeting will be: Integrable difference equations, symmetries of ordinary and partial difference equations, cellular automata, discrete monodromy problems, $q-$special functions, discrete geometry, applications to physics and engineering.

In this meeting, lectures will be delivered in the auditorium of the Graduate School of Mathematical Sciences, University of Tokyo. (Information is available on `http://liaison.ms.u-tokyo.ac.jp/`) Since our idea is to keep to a single session format, we plan to accept only a restricted number of applications. All of the talks will be from 20 to 30 minutes long. We will also organize poster sessions.

The cost of participation consists of a registration fee (including excursion and banquet) of 15,000 Yen. As for the accommodation, we are happy to provide reservations in the hotel:

HILPORT HOTEL
Sakuraoka-cho 23-19, Shibuya-ku, Tokyo 150-0031, Japan
Tel. (+81)3-3462-5171 Fax. (+81)3-3496-2066

at the price of 12,000 Yen (all inclusive, i.e. breakfast, lunch and dinner) or 9,500 Yen (with breakfast only) per day.

Invited speakers:

- M. Ablowitz (U. Colorado-USA)
- V. Adler (UFA-Russia)
- C. Brezinski (U. Lille-France)
- A. Doliwa (Warsaw U.-Poland)
- C. Gilson (U. Glasgow-UK)
- V. Gromak (Belarus State U.- Belarus)
- X. Hu (Academia Sinica-China)
- R. Kashaev (Steklov Math Institute, St. Petersburg-Russia)
- B. Konopelchenko (U. di Lecce-Italy)
- D. Levi (U. di Roma Tre-Italy)
- S. Leble (Technical U. of Gdańsk, Poland)
- S. Ruijsenaars (CRM, Amsterdam-Netherlands)
- W. Schief (U. New South Wales-Australia)

- S. Sergeev (Protvino-Russia)
- E. Sklyanin (Steklov Math. Institute, St. Petersburg-Russia)
- Yu. Suris (U. Bremen-Germany)
- W. Van Assche (U. Leuven-Belgium)
- P. Winternitz (U. de Montreal-Canada)

Organizing committee:

- M. Toda (honorary chairperson)
- J. Satsuma (chairperson, U. Tokyo-Japan)
- B. Grammaticos (Paris VII-France)
- J. Hietarinta (U. Turku-Finland)
- N. Joshi(U. Adelaide-Australia)
- F. Nijhoff (U. Leeds-UK)
- J. Nimmo (U. Glasgow-UK)
- D. Takahashi (U. Waseda-Japan)
- T. Tokihiro (U. Tokyo-Japan)
- R. Willox (U. Tokyo-Japan & VU. Brussel-Belgium)

Scientific committee:

- R. Hirota (honorary chairperson, U. Waseda-Japan)
- K. Okamoto (chairperson, U. Tokyo-Japan)
- L. Faddeev (Steklov Math. Institut, St. Petersburg-Russia)
- M. Jimbo (U. Kyoto-Japan)
- K. Kajiwara (U. Doshisha-Japan)
- M. Kruskal (U. Rutgers-USA)
- D. Levi (U. Roma Tre-Italy)
- A. Nagai (U. Osaka-Japan)Y
- Y. Nakamura (U. Osaka-Japan)
- V. Papageourgiou (U. Patras-Greece)
- A. Ramani (Ecole Polytechnique-France)
- C. Viallet (Paris VI-France)
- P. Winternitz (U. Montreal-Canada)

Local organizing committee: J. Satsuma, T. Tokihiro
Graduate School of Mathematical Sciences,
University of Tokyo,
3-8-1 Komaba, Meguro-ku,
Tokyo 153-8914, Japan
e-mail: satsuma@poisson.ms.u-tokyo.ac.jp
toki@poisson.ms.u-tokyo.ac.jp
fax: +81-3-5465-8312

If you are interested in attending, please visit the web site:

http://elrond.doshisha.ac.jp/side4/index.html

where you can find the application form which should be sent to us. Information updates will be available on this web site.

J. Satsuma
(satsuma@poisson.ms.u-tokyo.ac.jp)
T. Tokihiro
(toki@poisson.ms.u-tokyo.ac.jp)

3. Program "Symmetric functions and Macdonald polynomials". Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, January to June 2001

The Isaac Newton Institute for Mathematical Sciences, Cambridge, UK will host a program "Symmetric functions and Macdonald polynomials" during January-June 2001.

Organisers: Professor P. Hanlon, Professor I.G. Macdonald and Professor A.O. Morris.

The overall programme: In the 1980s, IG Macdonald formulated a series of conjectures which predicted the constant terms of expressions that involve an important new class of symmetric functions called the Macdonald polynomials. Since their introduction, these conjectures and polynomials have been a central topic of study in Algebraic Combinatorics. Of particular note has been the variety of approaches used in efforts to solve the conjectures or to find an algebraic or geometric interpretation for the Macdonald polynomials themselves. Different approaches involve double affine Hecke algebras, homology of nilpotent Lie algebras, generalized traces of Lie algebra representations and diagonal actions of the symmetric group on polynomial rings in two sets of variables. In this programme we will attempt to unify these different approaches to the Macdonald polynomials and some of the outstanding conjectures that have resulted from this work. Links with other areas such as algebraic geometry, Lie algebras, non-commutative algebra, mathematical physics and mathematical statistics will be emphasised.

Inside this programm will be three Workshops (see the

following two items of this issue):

- EuroWorkshop: Conjectures, Recent Results and Open Problems Related to the Macdonald Polynomials (8 - 12 January 2001),
- Applications of the Macdonald Polynomials (17 - 20 April 2001)
- NATO ASI - Symmetric Functions 2001: Surveys of Developments and Perspectives

Further information can be obtained in

`http://www.newton.cam.ac.uk/programs/sfm.html`

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4. Conjectures, recent results and open problems related to the Macdonald polynomials. Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, January, 8-12, 2001.

The EuroWorkshop: "Conjectures, Recent Results and Open Problems Related to the Macdonald Polynomials" is a part of the Isaac Newton Institute for Mathematical Sciences' Program "Symmetric functions and Macdonald polynomials" (see the previous item of this issue)

This EuroWorkshop will serve to launch the programme on Symmetric Functions and Macdonald Polynomials by providing an introduction to the subject. Specialists will give a series of lectures which cover the origins of the subject, the current state of knowledge and open problems & conjectures.

Speakers: Adriano Garsia (University of California at San Diego); Phil Hanlon (University of Michigan); Ian Macdonald (Queen Mary College); Eric Opdam (University of Amsterdam); John Stembridge (University of Michigan).

Location and Cost: The EuroWorkshop will take place at the Newton Institute and accommodation for participants will be provided in single study bedrooms at Wolfson Court, a hall of residence adjacent to the Institute. The workshop package costs £300, which includes registration fee, accommodation, breakfast and dinner from dinner on Sunday 7 January until breakfast on Saturday 13 January, and lunches and refreshments on the days that lectures take place

Further information and application forms: Completed application forms should be sent to Tracey Andrew at the Newton Institute or via email to: `t.andrew@newton.cam.ac.uk`. Scientific enquiries may be addressed to Professor Hanlon (`hanlon@math.lsa.umich.edu`) or Professor Morris (`aom@aber.ac.uk`)

Closing date for receipt of applications and abstracts is 20 October 2000.

Rafael J. Yáñez
(ryanez@ugr.es)
Renato Álvarez-Nodarse
(ran@cica.es)

5. NATO Advanced Study Institute. Symmetric Functions 2001: Surveys of Developments and Perspectives. Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, June 25 - July 6, 2001.

This NATO Advanced Study Institute is a part of the Isaac Newton Institute for Mathematical Sciences' Program "Symmetric functions and Macdonald polynomials" (see the previous two item of this issue)

Topics: Macdonald polynomials. Combinatorial and asymptotic problems in representation theory, algebraic geometry, and mathematical physics.

International Organizing Committee:

- Sergey Fomin, University of Michigan, U.S.A. (Director from a NATO country)
- Grigori Olshanski, Dobrushin Lab, IPPI, Russia (Director from a Partner country)
- Phil Hanlon, University of Michigan, U.S.A.
- Ian G. Macdonald, QMW, University of London, U.K.
- Andrei Okounkov, University of California at Berkeley, U.S.A.

Lecturers:

- Ivan Cherednik, University of North Carolina, U.S.A.
- Persi Diaconis, Stanford University, U.S.A.
- William Fulton, University of Michigan, U.S.A.
- Mark Haiman, University of California at San Diego, U.S.A.
- Phil Hanlon, University of Michigan, U.S.A.
- Alexander Klyachko, Bilkent University, Turkey
- Bernard Leclerc, Université de Caen, France

- Ian G. Macdonald, QMW, University of London, U.K.
- Masatoshi Noumi, Kobe University, Japan
- Andrei Okounkov, University at California at Berkeley, U.S.A.
- Grigori Olshanski, Dobrushin Lab, IPPI, Russia
- Eric Opdam, Korteweg-de Vries Institute, The Netherlands
- Anatoly Vershik, Steklov Institute, St.Petersburg Branch, Russia
- Andrei Zelevinsky, Northeastern University, U.S.A.

The SF-2001 web page

`http://www.math.lsa.umich.edu/ fomin/SF2001/`

at the Newton Institute has application/registration forms, information on financial support, lodging, and travel. This ASI is planned as the concluding event of the Scientific Programme on Symmetric Functions and Macdonald Polynomials at the Newton Institute.

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Renato Álvarez-Nodarse
(ran@cica.es)

6. Workshop on Quasiclassical and Quantum Structures. Fields Institute Toronto, Ontario, Canada, January 9-14, 2001.

Organizers: Pavel Etingof, Massachusetts Institute of Technology and Boris Khesin, University of Toronto

Topics include:

- Classical and quantum integrable systems
- Macdonald theory
- Poisson-Lie groups, quantum groups, dynamical quantum groups, and quantization
- Infinite-dimensional Lie algebras and structures, and their quantum deformations
- $q-$Virasoro, $q-$W-algebras and their quasiclassical limits, affine and quantum affine algebras at the critical level
- Quantization of Poisson manifolds
- Hypergeometric and q-hypergeometric functions, their generalizations, KZ, qKZ, KZB, qKZB equations, Elliptic quantum groups

Limited funds may be available to assist graduate students and postdoctoral participants. Please contact the organizers by fax at: (416) 348-9759, or through e-mail at: `lt-structure@fields.utoronto.ca`

All are welcome.

This Workshop is part of the "Infinite-dimensional Lie Theory and its Applications" and "Symplectic Geometry, Topology, and Gauge Theory" programs, both hosted by the Fields Institute in Fall 2000 and Spring 2001, respectively.

Contact mailing address:
c/o Lie Theory, The Fields Institute 222 College Street, Toronto, Ontario M5T 3J1 Telephone: (416) 348-9710 Fax: (416) 348-9759

Martin Muldoon
(muldoon@yorku.ca)

7. Sixth International Symposium on Orthogonal Polynomials, Special Functions and Applications, Rome (Italy), June 18-22, 2001.

Dear colleagues,

The sixth international Symposium on Orthogonal Polynomials, Special Functions and their Applications will be held on June 18 - 22, 2001 in Roma (Italy).

The 6th OPSFA follows the European Conferences of Bar-Le-Duc (France, 1984), Segovia (Spain, 1986), Erice (Italy, 1990), Granada (Spain, 1991, VII SPOA), Evian (France, 1992), Delft (Holland, 1994, in honour of Thomas Jan Stieltjes Jr. (1856-1894)), Sevilla (Spain, 1997, VIII SPOA) and Patra (Greece, 1999, in honour of Theodore Chihara).

Invited Speakers :

- R. Askey (University of Wisconsin - USA)
- C. Dunkl (University of Virginia - USA)
- À. Elbert (Academy of Sciences Budapest - Hungary)
- D. Sattinger (University of Utah - USA)
- D. Stanton (University of Minnesota - USA)
- S. K. Suslov (Arizona State University - USA)
- N. Temme (C.W.I. - Netherlands)
- W. Van Assche (K.U. Leuven - Belgium)

Scientific Committee:

- A. Laforgia (Universitá Roma Tre, Italy)

- P. E. Ricci (Universitá "La Sapienza", Roma, Italy)
- M. De Bruin (University of Delft, Netherlands)
- F. Marcellan (Universidad Carlos III, Madrid, Spain)
- P. D. Siafarikas (University of Patras, Greece)
- M. Muldoon (York University, Canada)
- R. Wong (City University of Hong Kong, China)

The scientific program is currently being elaborated by the scientific committee. It will consist, as usual, of some plenary lectures and short communications (20 minutes). The second circular, to be distributed in autumn 2000, will give more information about it.

The cost of attendance is expected to be quite reasonable. The registration fee will be around 250 Euros, which includes the admission to the Symposium, a copy of the book of abstracts, a copy of the Proceedings, reception and participation in some social events (welcome drink, visit to Rome's surroundings, etc.).

Until June 16, the organizing committee received almost 120 preregistration forms, mostly from Europe. Although the deadline for the preregistration has expired, all those who are interested in attending the Symposium may send the preliminary registration form via web or via airmail as soon as possible. The registration form will be put on line before November 2000, together with the second circular. The Symposium site and the hotels for participants at the meeting are situated at Lido di Ostia (the seaside resort at the outskirts of Roma), at a few km. from the "Leonardo Da Vinci" International Airport of Fiumicino; from where the centre of Roma is easily accessible (about 25' by subway).

More details about accommodation, travelling expenses and transportation of the participants from the airport will be given in the next circulars.

Mailing address:

Sixth International Symposium on Orthogonal Polynomials, Special Functions and their Applications.
Dipartimento di Matematica
(to prof. Andrea LAFORGIA)
Universitá Roma Tre
Largo S. Leonardo Murialdo, 1
00146 ROMA (Italy)
tel. +39+06+54888025, 54888008; fax 54888072.

Notice: You may also send the preregistration form via e-mail; please see the Web page

`www.mat.uniroma3.it/opsfa2001`

You may also use the e-mail address of the Symposium `opsfa2001@mat.uniroma3.it` or the e-mail addresses of the members of the local organizing committee:

- Prof. Andrea Laforgia: `laforgia@mat.uniroma3.it`
- Prof. Paolo Emilio Ricci: `riccip@.uniroma1.it`
- Dott. Pierpaolo Natalini: `natalini@mat.uniroma3.it`
- Dott.ssa Silvia Noschese: `noschese@uniroma1.it`
- Dott. Biagio Palumbo: `palumbo@mat.uniroma3.it`

Please bring this announcement to the attention of interested people.

Looking forward to seeing you in Roma

Andrea Laforgia
(laforgia@mat.uniroma3.it)

8. Hong Kong Summer School in Applied Analysis. City University of Hong Kong. July 2-13, 2001.

Dates: July 2nd- July 13, 2001

Place: City University of Hong Kong

Organizing Committee: Joaquin Bustoz, Mourad Ismail, Rupert Lasser, Jurgen Prestin, Rod Wong.

Lecturers (Confirmed): A. Grunbaum (Berkeley) M. E. H. Ismail (U South Florida and City U), A. Its (IUPUI and U Penn), R. Lasser (Munich), B. Simon (Caltech), W. Van Assche (Leuven), and Rod Wong (City U).

In addition to the above structured courses we intend to have several one hour talks on more advanced topics. This will be done in the later part of the program.

Conference Secretary: Colette Lam.

Contact Information: `malam@cityu.edu.hk`

Rafael J. Yáñez
(ryanez@ugr.es)

9. European Summer School in Mathematics: Asymptotic combinatorics with applications to mathematical physics, July 9-22, 2001, Saint-Petersburg, Russia.

Short description: The summer school aims to observe the recent progress in the asymptotic theory of Young tableaux and random matrices from the point of view of combinatorics, representation theory and theory of integrable systems. The systematic courses on the subjects and current investigations will be presented. For further information see the URL:

http://www.pdmi.ras.ru/EIMI/2001/emschool/

Tom H. Koornwinder
(thk@wins.uva.nl)

10. First Announcement: 2001: A Mathematics Odyssey. A conference on the analytic theory of continued fractions, orthogonal functions, rational approximation and related topics. Grand Junction (Colorado, USA), August 6-10, 2001.

A celebration of the 70th birthday of Dr. William B. Jones Professor Emeritus University of Colorado, Boulder, USA

In recognition of the contributions Professor William B. Jones has made to the field of continued fractions and rational approximation, we are pleased to announce a conference organized in his honor. The conference will be held August 6-10, 2001, at Mesa State College in Grand Junction, Colorado, USA. We invite contributions from both the theoretical and computational aspects of continued fractions, orthogonal polynomials, rational approximation, and related areas and applications.

There is no need to commit to attending the conference at this time. However, if you are interested in receiving a second announcement and would like to be on our mailing list, please respond or email to one of the organizers at the address below, including your name, mailing address and email address.

More information about Mesa State College and Grand Junction, Colorado, can be found at http://www.mesastate.edu, and http://www2.mesastate.edu/community_links.htm.

We hope to see you there.

Organizers:
Cathy Bonan-Hamada, Phil Gustafson
Mathematics Department
Mesa State College
1100 North Ave.
Grand Junction, CO
81501-3122 USA

Cathy Bonan-Hamada
(cbonan@mesastate.edu)
Phil Gustafson
(pgustafs@mesastate.edu)

11. Third International Dortmund Meeting in Approximation Theory. Haus Bommerholz - Witten, Germany. August 20 - 24, 2001

Organizers:

- Martin D. Buhmann, University of Giessen (martin.buhmann@math.uni-giessen.de),
- Detlef H. Mache, University of Dortmund, (mache@math.uni-dortmund.de),
- Manfred W. Müller, University of Dortmund (mueller@math.uni-dortmund.de).

The main aim of this conference IDoMAT 2001 is to bring together invited researchers, to discuss problems and to promote the transfer of results, ideas and applicable methods in the following fields in the Theory of Constructive Approximation:

- Approximation Methods
- Approximation by Operators
- Interpolation
- Radial Basis Functions
- Orthogonal Polynomials
- (Multi-) Wavelets
- Neuronal Networks
- CAGD

Proceedings of IDoMAT 2001 and accepted research papers: We intend to publish the invited lectures and the accepted research papers in the Proceedings (Volume 3): New Topics in Constructive Approximation.

This third Volume (after Volume 1: Approximation Theory - IDoMAT 95 (Akademie Verlag Berlin) and Volume 2: New Developments in Approximation Theory - IDoMAT 98 (Birkhäuser Verlag Basel)) will be published in the International Series of Numerical Mathematics by Birkhäuser Verlag Basel.

IDoMAT 2001 - Office:

University of Dortmund
Institute of Applied Mathematics (Approximation Theory, LS VIII)
D - 44221 Dortmund (Germany)

E-mail: idomat@math.uni-dortmund.de

Rafael J. Yáñez
(ryanez@ugr.es)

12. Session "Computer Algebra and Computer Analysis" of the 3rd International ISAAC Congress, Berlin, Germany, 20-25 August 2001

- Dear colleagues,

This is to advertise the session "Computer Algebra and Computer Analysis" of the 3rd International ISAAC

Congress (ISAAC=International Society for Analysis, Applications and Computing; this is **not** the ISSAC!) which will take place in Berlin from 20-25 August 2001, see

`http://www.math.udel.edu/~gilbert/isaac/isaac01`

The meeting offers sessions in a wide variety of topics primarily circling around applied analysis. Session VII.4 is devoted to "Computer Algebra and Computer Analysis", and will be organized by Karin Gatermann, Berlin (`gatermann@zib.de`) and Wolfram Koepf, Kassel (`koepf@mathematik.uni-kassel.de`).

Researchers in analysis often are not familiar with computer algebra or find its use unsuitable for their work. In contrast, we believe that computer algebra can be a very stimulating research tool in analysis. Therefore we would like to put a session program together which is an advertisement for our field, and which presents applications of computer algebra to topics relevant for analysis.

The following speakers have already confirmed to present keynote lectures in our session:

- Liz Mansfield (Canterbury, Great Britain) title to be announced
- Jan Sanders (Amsterdam, The Netherlands) The classification of integrable evolution equations using number theory
- Werner Seiler (Mannheim, Germany) Completion to involution and the numerical integration of general systems of PDEs

Please contact one of us as soon as possible if you are interested in participating and/or presenting a lecture in our session. The duration of the lectures will be probably 30 minutes (including discussion), but final decisions will be made later. We would be very happy about your positive answer. If possible, let us have a preliminary title of your lecture.

Karin Gaterman
(gatermann@zib.de)
Wolfram Koepf
(koepf@mathematik.uni-kassel.de)

13. International Conference on "NUMERICAL ALGORITHMS" dedicated to Claude Brezinski on the occasion of his 60th birthday. Marrakesh (Morocco), October 1-5, 2001

We intend to organize an international conference in October 2001 to celebrate the 60th birthday of Claude Brezinski and, at the same time, the 10th anniversary of the journal Numerical Algorithms that he founded in 1991 and where contributed papers will be published. The themes of the conference will cover all aspects of Numerical Analysis, in particular those which are related to numerical algorithms. The goal of this conference is to bring together experts from these areas. The numerical analysis community is warmly invited to attend so that we have a valuable scientific meeting and celebrate Claude's 60th birthday at the banquet.

A web site containing all the information about this conference can be found at

`http://www-lma.univ-littoral.fr/~na2001`

If you are interested in participating, please notify us as soon as possible at the address

`na2001@lma.univ-littoral.fr`

In this way, you will regularly receive new updated information about this event.

Organizing committee:

- B. Beckermann (University of Lille I, France)
- A. Bentbib (Faculty of Sciences and Technologies, Marrakesh, Morocco)
- B. Germain-Bonne (University of Lille I, France)
- J.-P. Chehab (University of Lille I, France)
- M. El Alaoui-Talibi (Faculty of Sciences Semlalia, Marrakesh, Morocco)
- A. Fdil (ENS, Marrakesh, Morocco)
- A. Lembarki (Faculty of Sciences Semlalia, Marrakesh, Morocco)
- M. Prevost (University of Littoral, Calais, France)
- A. Matos (University of Lille I, France)
- A. Messaoudi (ENS, Rabat, Morocco)
- M. Redivo-Zaglia (University of Calabria, Cosenza, Italy)
- R. Sadaka (ENS, Rabat, Morocco)
- H. Sadok (University of Littoral, Calais, France)
- J. Van Iseghem (University of Lille I, France)

Planes and Airports: The main international airport in Morocco is the AEROPORT DE CASABLANCA MOHAMMED V. Casablanca has direct connections to major European cities (e.g., Amsterdam, Barcelona, Bordeaux, Brussels, Frankfurt, Genf, Lisboa, London, Lyon, Madrid, Marseille, Moscow, Nice, Paris, Roma, Strasbourg, Toulouse) and elsewhere (e.g., Johannesburg, Montreal, New York). Airlines serving Casablanca (e.g.):

ROYAL AIR MAROC (AT), AIR FRANCE (AF), ALITALIA (AZ), BRITISH AIRWAYS (BA), SWISSAIR (SR), LUFTHANSA (LH), IBERIA (IB), SABENA (SN), AEROFLOT (SU).

Marrakech can be reached by plane from Casablanca (one hour). There are also direct flights to Marrakech (including charters) from several major European cities.

If you arrive in Casablanca and you would like to discover Morocco: there is a train connection from Casablanca to Marrakech.

Visa: For a stay up to three months, citizens from the following countries do not require a visa but a return ticket and a passport being valid for at least 6 months from date of entry (NB: children of 15 and under may travel on their parents' passport, but must have photographs included in these passports by the relevant passport authorities) : European Union, Andorra, Argentina, Australia, Bahrain, Brazil, Canada, Chile, Congo (Rep. of), Côte d'Ivoire, Guinea, Iceland, Indonesia, Japan, Korea (Rep. of), Kuwait, Libya, Liechtenstein, Mali, Malta, Mexico, Monaco, New Zealand, Niger, Norway, Oman, Peru, Philippines, Puerto Rico, Qatar, Romania, Saudi Arabia, Senegal, Switzerland, Tunisia, Turkey, United Arab Emirates, USA, and Venezuela

For citizens from other countries and further details please contact the Moroccan embassy.

Accomodation: Participants will be accomodated in a 4 stars hotel comparable to the best European or American hotels. In Marrakesh, the weather is very nice in October and the town can be easily reached by plane from Casablanca (one hour). Casablanca has direct connections to major European cities and to New York and Montreal.

A special reduced price will be negociated for the participants. We hope that the prices will be about 230 MAD (30USD) for one person in a double room and 320MAD (40USD) in a single room.

Special requirements should be communicated to the Organizing Committee by e-mail at `na2001@lmpa.univ-littoral.fr`.

If you want to look at the kind of hotels in Marrakesch, see `http://hotelinfoplus.com` or Marrakesh Hotels (`http://www.m-link.com/almusaafer/MOROCCO/HOTELS/hotmarak.html`).

Weather: In October, the weather in Marrakech is very nice and not too hot (about 27 degrees Celsius).

Money: Approximate exchange rate (June 2000): 100 Moroccan Dirham = 10.3 Euro = 417 Belgian Franc = 67.8 French Franc = 20.2 German Mark = 9.3123 US Dollar

Rafael J. Yáñez
(ryanez@ugr.es)

Future Planning

If you are planning to organize a workshop, summer school, conference, special session, etc., we suggest that you inform one of the officers of the SIAM activity group and we will keep the activity group informed by publishing the intended date in the newsletter, so as to avoid the coincidence of several meetings. Please contact the local organizers in case of conflict or for finding a solution for possible overlap. The SIAM activity group will not be involved in the actual organization.

- As already mentioned in OP-SF NET 6.5, the next meeting in the series Fields-Toronto (1995) - CRM-Montreal (1996) - Mount Holyoke (1998) - Hong Kong (1999) - Arizona (2000) is expected to be held in Amsterdam, in 2002, probably in early summer, to be organized by Tom Koornwinder (thk@uwa.wins.nl), Nico Temme (nico@cwi.nl) and Erik Koelink (koelink@twi.tudelft.nl).

- There are plans to organize summer schools on "Orthogonal Polynomials and Special Functions" in Europe during the coming three years:

  - 2001 (probably September): in Germany (contact person: Rupert Lasser <lasser@gsf.de>)
  - 2002 (the week before the Special Functions meeting in Amsterdam): in the Netherlands or Belgium (contact person: Erik Koelink <koelink@twi.tudelft.nl>).
  - 2003 (time undecided): in Portugal (contact person: Amilcar Branquinho).

  Coordinator of the three summer schools is Erik Koelink (koelink@twi.tudelft.nl). These summer schools are part of our Activity Group's scientific program. The scientific committee consists of Erik Koelink, Rupert Lasser, Amilcar Branquinho, Paco Marcellan and Walter Van Assche.

- There is a plan for an IMA 2002 Summer Program "Special Functions in the Digital Age" to be held in Minneapolis, USA, July 22 - August 2, 2002.

Walter Van Assche
(walter@wis.kuleuven.ac.be)

Books and Journals

Book Announcements

1. Special Functions - A Unified Theory Based on Singularities
Wolfgang Lay (Stuttgart) and Sergei Yuryevitsh Slavyanov (St. Petersburg)
Oxford University Press, 320 pp.; 50 line illus; 0-19-850573-6, November 2000.

This information is from the WWW:

`http://www.oup-usa.org/isbn/0198505736.html`

The subject of this book is the theory of special functions, not considered as a list of functions exhibiting a certain range of properties, but based on the unified study of singularities of second-order ordinary differential equations in the complex domain. The number and characteristics of the singularities serve as a basis for classification of each individual special function. Links between linear special functions (as solutions of linear second-order equations), and non-linear special functions (as solutions of Painleve equations) are presented as a basic and new result. Many applications to different areas of physics are shown and discussed. The book is written from a practical point of view and will address all those scientists whose work involves applications of mathematical methods. Lecturers, graduate students and researchers will find this a useful text and reference work.

CONTENTS:
Preface
Chapter 1. Linear Second-order ODE with Polynomial Coefficients
Chapter 2. The Hypergeometric Class of Equations
Chapter 3. The Heun Class of Equations
Chapter 4. Application to Physical Sciences
Chapter 5. The Painleve Class of Equations
Appendix A. Gamma-Function and Related Functions
Appendix B. CTCPs for Heun Equations in General Form
Appendix C. Multipole Matrix Elements
Appendix D. SFTools - Database of the Special Functions

Martin Muldoon
(muldoon@yorku.ca)

2. Elliptic Polynomials
Lomont; J S University of Arizona, USA Brillhart; John University of Arizona, USA
Chapman & Hall/CRC; 320 pp.;ISBN/ISSN: 1584882107; 8/31/2000.

This information is from the WWW:

`http://www.crcpress.com`

Description: A remarkable interplay exists between the fields of elliptic functions and orthogonal polynomials. In the first monograph to explore their connections, Elliptic Polynomials combines these two areas of study, leading to an interesting development of some basic aspects of each. It presents new material about various classes of polynomials and about the odd Jacobi elliptic functions and their inverses.

The term elliptic polynomials refers to the polynomials generated by odd elliptic integrals and elliptic functions. In studying these, the authors consider such things as orthogonality and the construction of weight functions and measures, finding structure constants and interesting inequalities, and deriving useful formulas and evaluations.

Although some of the material may be familiar, it establishes a new mathematical field that intersects with classical subjects at many points. Its wealth of information on important properties of polynomials and clear, accessible presentation make Elliptic Polynomials valuable to those in real and complex analysis, number theory, and combinatorics, and will undoubtedly generate further research.

Martin Muldoon
(muldoon@yorku.ca)

Book Reviews

Special Functions
By George E. Andrews, Richard Askey, Ranjan Roy
Encyclopedia of Mathematics and its Applications Vol. 71. Cambridge University Press, Cambridge, 1999.

There is a very nice review by Jet Wimp of the book "Special Functions" by Askey-Andrews-Roy in *Bull Amer Math Soc* **37** (2000), pp. 499-510. We had a review of this book already (by Wolfram Koepf, see Newsletter Volume 10, Number 1, October 1999).

This new review can be downloaded from the URL:

`http://www.ams.org/bull/2000-37-04/`

Tom H. Koornwinder
(thk@wins.uva.nl)

OP-SF preprints

In this section we will include information on some recent preprints related to Orthogonal Polynomials and Special Functions that were recently posted or cross-listed to one of the subcategories of the xxx archives. See:

- `http://front.math.ucdavis.edu/math.CA`
- `http://front.math.ucdavis.edu/math.CO`
- `http://front.math.ucdavis.edu/math.QA`

- http://xxx.lanl.gov/archive/solv-int

1. math.CO/0008180
Title: *A continued fraction expansion for a q-tangent function*
Author: Markus Fulmek
Categories: CO Combinatorics (CA Classical Analysis)
Math Subject Class: 05A30
Comments: 5 pages, LaTeX
From: Markus Fulmek
(markus.fulmek@univie.ac.at)

Abstract: We prove a continued fraction expansion for a certain q–tangent function that was conjectured by Prodinger.

2. math.CO/0007001
Title: *A double bounded key identity for Goellnitz's (big)*
partition theorem
Authors: K. Alladi, A. Berkovich
Categories: CO Combinatorics (NT Number Theory; QA Quantum Algebra)
Math Subject Class: 05A15, 05A19, 11P81, 11P82, 11P83
Comments: 17 pages, to appear in Proceedings of Gainesville 1999 Conference on Symbolic Computations
From: Alexander Berkovich (alexb@math.ufl.edu)

Abstract: Given integers i,j,k,L,M, we establish a new double bounded q-series identity from which the three parameter (i,j,k) key identity of Alladi-Andrews-Gordon for Goellnitz's (big) theorem follows if L, M tend to infinity. When L = M, the identity yields a strong refinement of Goellnitz's theorem with a bound on the parts given by L. This is the first time a bounded version of Goellnitz's (big) theorem has been proved. This leads to new bounded versions of Jacobi's triple product identity for theta functions and other fundamental identities.

3. math.CA/0007046
Title: *A simple proof of Bailey's very-well-poised ${}_6\psi_6$ summation*
Author: M. Schlosser (The Ohio State University)
Categories: CA Classical Analysis (CO Combinatorics; QA Quantum Algebra)
Math Subject Class: 33D15
Comments: LaTeX, 4 pages
From: Michael Schlosser
(mschloss@math.ohio-state.edu)

Abstract: Using Rogers' nonterminating ${}_6\phi_5$ summation and elementary series manipulations, we give a simple proof of Bailey's very-well-poised ${}_6\psi_6$ summation. This proof extends M. Jackson's first proof of Ramanujan's ${}_1\psi_1$ summation.

4. math.QA/0009231
Title: *t-analogue of the q-characters of finite dimensional representations of quantum affine algebras*
Author: Hiraku Nakajima
Categories: QA Quantum Algebra (RT Representation Theory)
Comments: 18 pages
From: Hiraku Nakajima
(nakajima@kusm.kyoto-u.ac.jp)

Abstract: Frenkel-Reshetikhin introduced q-characters of finite dimensional representations of quantum affine algebras. We give a combinatorial algorithm to compute them for all simple modules. Our tool is t-analogue of the q-characters, which is similar to Kazhdan-Lusztig polynomials, and our algorithm has a resemblance with their definition.

5. math.QA/0009023
Title: *Classical versions of q-Gaussian processes: conditional moments and Bell's inequality*
Author: Wlodzimierz Bryc
Categories: QA Quantum Algebra (OA Operator Algebras; PR Probability Theory)
Math Subject Class: 81S05; 60E99
Comments: LaTeX, 12 pages
From: Wlodek Bryc
(brycw@math.uc.edu)

Abstract: We show that classical processes corresponding to operators what satisfy a q-commutative relation have linear regressions and quadratic conditional variances. From this we deduce that Bell's inequality for their covariances can be extended from $q = -1$ to the entire range $-1 < q < 1$.

6. math.QA/0008199
Title: *Polynomiality of the q,t-Kostka Revisited*
Authors: A. M. Garsia, Mike Zabrocki
Categories: QA Quantum Algebra (CO Combinatorics)
Math Subject Class: 05E05
Comments: 19 pages; to appear in a Volume dedicated to the memory of G. C. Rota edited by Domenico Senato U. of Basilicata
From: Mike Zabrocki
(zabrocki@math.uqam.ca)

Abstract: Let $K(q,t) = \|K_{\lambda\mu}(q,t)\|_{\lambda,\mu}$ be the Macdonald q,t-Kostka matrix and $K(t) = K(0,t)$ be the

matrix of the Kostka-Foulkes polynomials $K_{\lambda\mu}(t)$. In this paper we present a new proof of the polynomiality of the q,t-Kostka coefficients that is both short and elementary. More precisely, we derive that $K(q,t)$ has entries in $\mathbb{Z}[q,t]$ directly from the fact that the matrix $K(t)^{-1}$ has entries in $\mathbb{Z}[t]$. The proof uses only identities that can be found in the original paper of Macdonald.

7. math.QA/0008196 Title: *Summation Formulas for the product of the q-Kummer Functions from $E_q(2)$*
Author: H. Ahmedov, I. H. Duru
Categories: QA Quantum Algebra (RT Representation Theory)
Report number: FGI.PH.TH 1.2000
Comments: Latex, 8 pages
From: Hagi Ahmedov
(hagi@gursey.gov.tr)

Abstract: Using the representation of $E_q(2)$ on the non-commutative space $zz^* - qz^*z = \sigma$; $q < 1$, $\sigma > 0$ summation formulas for the product of two, three and four $q-$Kummer functions are derived.

8. math.QA/0008188
Title: *q-Analogs of symmetric function operators*
Author: Mike Zabrocki
Categories: QA Quantum Algebra (CO Combinatorics)
Math Subject Class: 05E05
Comments: 21 pages
From: Mike Zabrocki
(zabrocki@math.uqam.ca)

Abstract: For any homomorphism V on the space of symmetric functions, we introduce an operation which creates a $q-$analog of V. By giving several examples we demonstrate that this quantization occurs naturally within the theory of symmetric functions. In particular, we show that the Hall-Littlewood symmetric functions are formed by taking this q-analog of the Schur symmetric functions and the Macdonald symmetric functions appear by taking the $q-$analog of the Hall-Littlewood symmetric functions in the parameter t. This relation is then used to derive recurrences on the Macdonald q,t-Kostka coefficients.

9. math.QA/0008163
Title: *Ribbon Operators and Hall-Littlewood Symmetric Functions*
Author: Mike Zabrocki
Categories: QA Quantum Algebra
Math Subject Class: 17B37; 46L87; 81R50
Comments: 20 pages, Latex2e, amsart
From: Mike Zabrocki
(zabrocki@math.uqam.ca)

Abstract: We study covariant differential calculus on the quantum spheres S_q^{N-1} which are quantum homogeneous spaces with coactions of the quantum groups $O_q(N)$.

The first part of the paper is devoted to first order differential calculus. A classification result is proved which says that for $N >= 6$ there exist exactly two covariant first order differential calculi on S_q^{N-1} which satisfy the classification constraint that the bimodule of one-forms is generated as a free left module by the differentials of the generators of S_q^{N-1}. Both calculi exist also for $3 <= N <= 5$. The same calculi can be constructed using a method introduced by Hermisson. In case $N = 3$, the result is in accordance with the known result by Apel and Schmüdgen for the Podles sphere.

In the second part, higher order differential calculus and symmetry are treated. The relations which hold for the two-forms in the universal higher order calculus extending one of the two first order calculi are given. A "braiding" homomorphism is found. The existence of an upper bound for them order of differential forms is discussed.

10. math.QA/0008094
Title: *Combinatorial formula for Macdonald polynomials, Bethe Ansatz, and generic Macdonald polynomials*
Author: Andrei Okounkov
Categories: QA Quantum Algebra (CO Combinatorics; RT Representation Theory)
Comments: Latex, 18 pages, no figures
From: Andrei Okounkov
(okounkov@math.uchicago.edu)

Abstract: We give a direct proof of the combinatorial formula for interpolation Macdonald polynomials by introducing certain polynomials, which we call generic Macdonald polynomials, which depend on d additional parameters and specialize to all Macdonald polynomials of degree d. The form of these generic polynomials is that of a Bethe eigenfunction and they imitate, on a more elementary level, the R-matrix construction of quantum immanants.

11. math.QA/0008073
Title: *A filtration of the symmetric function space and a refinement of the Macdonald positivity conjecture*
Authors: L. Lapointe, A. Lascoux, J. Morse
Categories: QA Quantum Algebra (CO Combinatorics)
Math Subject Class: 05E05;05E10
Report number: CRM-2680

Comments: 38 pages, 7 figures
From: Luc Lapointe
(lapointe@crm.umontreal.ca)

Abstract: Let Λ be the space of symmetric functions and V_k be the subspace spanned by the modified Schur functions $\{S_\lambda[X/(1-t)]\}_{\lambda_1 \leq k}$. We introduce a new family of symmetric polynomials, $\{A^{(k)}_\lambda[X;t]\}_{\lambda_1 \leq k}$, constructed from sums of tableaux using the charge statistic. We conjecture that the polynomials $A^{(k)}_\lambda[X;t]$ form a basis for V_k and that the Macdonald polynomials indexed by partitions bounded by k expand positively in terms of our polynomials. A proof of this conjecture would not only imply the Macdonald positivity conjecture, but would substantially refine it. Our construction of the $A^{(k)}_\lambda[X;t]$ relies on the use of tableaux combinatorics and yields various properties and conjectures on the nature of these polynomials. Another important development following from our investigation is that the $A^{(k)}_\lambda[X;t]$s seem to play the same role for V_k as the Schur functions do for Λ. In particular, this has led us to the discovery of many generalizations of properties held by the Schur functions, such as Pieri and Littlewood-Richardson type coefficients.

12. math.QA/0007086
Title *QDYBE: some explicit formulas for exchange matrix and related objects in case of $sl(2)$, $q = 1$*
Authors: Tom H. Koornwinder, Nabila Touhami
Categories: QA Quantum Algebra (CA Classical Analysis)
Math Subject Class: 17B37, 33C80
Comments: 19 pages
From: Tom H. Koornwinder (thk@wins.uva.nl)

Abstract: This mainly tutorial paper is intended as a somewhat larger example for parts of the theory exposed in the Lectures on the dynamical Yang-Baxter equations by P. Etingof and O. Schiffmann, math.QA/9908064. We explicitly compute the matrix entries of the intertwining operator, fusion matrix and exchange matrix associated to sl(2,R) for q=1. We also consider the weighted trace function and the dual Macdonald-Ruijsenaars equation for this particular case. As expected, the matrix entries of the exchange matrix turn out to be Racah polynomials. However, the road to their explicit formula via the fusion matrix is quick, and it also yields an interesting way to derive their orthogonality relations.

13. math.QA/0007079
Title: *Some details of proofs of theorems related to the quantum dynamical Yang-Baxter equation*
Author: Tom H. Koornwinder
Categories: QA Quantum Algebra
Math Subject Class: 17B37
Comments: 14 pages
From: Tom H. Koornwinder (thk@wins.uva.nl)

Abstract: This paper gives some further details of proofs of some theorems related to the quantum dynamical Yang-Baxter equation. This mainly expands proofs given in "Lectures on the dynamical Yang-Baxter equation" by P. Etingof and O. Schiffmann, math.QA/9908064. This concerns the intertwining operator, the fusion matrix, the exchange matrix and the difference operators. The last part expands proofs given in "Traces of intertwiners for quantum groups and difference equations, I" by P. Etingof and A. Varchenko, math.QA/9907181. This concerns the dual Macdonald-Ruijsenaars equations. This paper does not claim originality, priority or completeness. It is meant as a service to whoever may take profit of it.

14. math.QA/9912142
Title: *The multiple sum formulas for $9j$ and $12j$ coefficients of SU(2) and $u_q(2)$*
Author: Sigitas Alisauskas
Categories: QA Quantum Algebra (MP Mathematical Physics)
Math Subject Class: 81R,33C,33D
Comments: 40 pages, REVTeX, uses Xy-pic, v. 4, minimal corrections and Comments
From: Sigitas Alisauskas (sigal@itpa.lt)

Abstract: Seven different triple sum formulas for $9j$ coefficients of the quantum algebra $u_q(2)$ are derived, using for these purposes the usual expansion of q-$9j$ coefficients in terms of q-$6j$ coefficients and recent summation formula of twisted q-factorial series (resembling the very well-poised basic hypergeometric ${}_5\phi_4$ series) as a q-generalization of Dougall's summation formula of the very well-poised hypergeometric ${}_4F_3(-1)$ series. This way for $q = 1$ the new proof of the known triple sum formula is proposed, as well as six new triple sum formulas for $9j$ coefficients of the SU(2) group, in the angular momentum theory. The mutual rearrangement possibilities of the derived triple sum formulas by means of the Chu–Vandermonde summation formulas are considered and applied to derive several versions of double sum formulas for the stretched q-$9j$ coefficients, which give new rearrangement and summation formulas of special Kampé de Fériet functions and their q-generalizations. Several fourfold sum formulas [with each sum of the ${}_5F_4(1)$ or ${}_5\phi_4$ type] for the $12j$ coefficients of the second kind (without braiding) of the SU(2) and $u_q(2)$ are proposed, as well as expressions with five sums [of

the ${}_4F_3(1)$ and ${}_3F_2(1)$ or ${}_4\phi_3$ and ${}_3\phi_2$ type] for the $12j$ coefficients of the first kind (with braiding) instead of the usual expansion in terms of q-$6j$ coefficients. Stretched and doubly stretched q-$12j$ coefficients [as triple, double or single sums, related to composed or separate hypergeometric ${}_4F_3(1)$ and ${}_5F_4(1)$ or ${}_4\phi_3$ and ${}_5\phi_4$ series, respectively] are considered.

15. math-ph/0007041
Title: *Mapping Integer Order Neumann Functions To Real Orders*
Author: M. Mekhfi
Categories: MP Mathematical Physics (FA Functional Analysis; CA Classical Analysis)
Comments: 6 pages, Latex
From: Mustapha MEKHFI
(mekhfi@elbahia.cerist.dz)

Abstract: In a recent paper we unified Bessel functions of different orders .Here we extend the unification to other linearly independent solutions to Bessel equation, Neumann's and Hankel's functions

16. math-ph/0007017
Title: *Witten deformed exterior derivative and Bessel functions*
Author: M. Mekhfi
Categories: MP Mathematical Physics (FA Functional Analysis; CA Classical Analysis)
Comments: 8 pages latex
From: Mustapha MEKHFI
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Abstract: In a recent paper we investigated the internal space of Bessel functions associated with their orders. We found a formula (new) unifying Bessel functions of integer and of real orders. In this paper we study the deformed exterior derivative system $H = d_\lambda$ on the punctured plane as a tentative to understand the origin of the formula and find that indeed similar formulas occur. This is no coincidence as we will demonstrate that generating functions of integer order Bessel functions and of real orders are respectively eigenstates of the usual exterior derivative and its deformation. As a direct consequence we rediscover the unifying formula and learn that the system linear in d_λ is related to Bessel theory much as the system quadratic in $(d_\lambda + d_\lambda^*)$ is related to Morse theory.

17. math.NT/0008068
Title: *Infinite families of exact sums of squares formulas, Jacobi elliptic*
functions, continued fractions, and Schur functions
Author: Stephen C. Milne
Categories: NT Number Theory (CA Classical Analysis)
Comments: 125 pages
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Abstract: In this paper we derive many infinite families of explicit exact formulas involving either squares or triangular numbers, two of which generalize Jacobi's 4 and 8 squares identities to $4n^2$ or $4n(n+1)$ squares, respectively, without using cusp forms. In fact, we similarly generalize to infinite families all of Jacobi's explicitly stated degree 2, 4, 6, 8 Lambert series expansions of classical theta functions. In addition, we extend Jacobi's special analysis of 2 squares, 2 triangles, 6 squares, 6 triangles to 12 squares, 12 triangles, 20 squares, 20 triangles, respectively. These results, depending on new expansions for powers of various products of classical theta functions, arise in the setting of Jacobi elliptic functions, associated continued fractions, regular C-fractions, Hankel or Turanian determinants, Fourier series, Lambert series, inclusion/exclusion, Laplace expansion formula for determinants, and Schur functions. The Schur function form of these infinite families of identities are analogous to the eta-function identities of Macdonald. Moreover, the powers $4n(n+1)$, $2n^2+n$, $2n^2-n$ that appear in Macdonald's work also arise at appropriate places in our analysis. A special case of our general methods yields a proof of the two Kac–Wakimoto conjectured identities involving representing a positive integer by sums of $4n^2$ or $4n(n+1)$ triangular numbers, respectively.

18. math.NT/0008017
Title: *Cancellation of factorials*
Author: Wadim Zudilin
Categories: NT Number Theory (CA Classical Analysis)
Math Subject Class: 11J82, 33C20 (Primary), 11C, 05A10
Comments: 28 pages, AmSTeX (Russian); submitted for publication
From: Wadim Zudilin (wadim@ips.ras.ru)

Abstract: We study the arithmetic property which allows to sharpen number-theoretic estimates. Previous results on this property are, as a rule, quantitive. The application of our general qualitive theorems to generalized hypergeometric functions extends the set of irrational numbers which are the values of these functions.

Problems and Solutions

Thus far 22 problems have been submitted, seven of which have been solved in previous issues. Still unsolved are Problems #**3**, **5**, **8**, **9**, **11**, **12**, **13**, **15**, **17**, **18**, **19**, **20**, **21** and **22**. A new problem (# **22**) has been submitted.

19. Uniform Bounds for Shifted Jacobi Multiplier Sequences. For Fourier series the following is immediate: Suppose the real or complex sequence $\{m_k\}$ generates a bounded operator on $L^p(\mathbf{T})$, $1 \le p \le \infty$, i.e., for polynomial f

$$\Big\| \sum m_k \hat{f}_k e^{ik\varphi} \Big\|_{L^p(\mathbf{T})} \le \|m\|_{M^p(\mathbf{T})} \Big\| \sum \hat{f}_k e^{ik\varphi} \Big\|_{L^p(\mathbf{T})} ,$$

then one has for the shifted sequence $\{m_{k+j}\}_{k\in\mathbf{Z}}$ that

$$\sup_{j\in\mathbf{N}_0} \|\{m_{k+j}\}\|_{M^p(\mathbf{T})} \le C \, \|m\|_{M^p(\mathbf{T})} , \; 1 \le p \le \infty . \quad (1)$$

Looking at cosine expansions on $L^p(0,\pi)$ one easily derives the analog of (1) via the addition formula

$$\cos(k \pm j)\theta = \cos k\theta \cos j\theta \mp \sin k\theta \sin j\theta$$

provided the periodic Hilbert transform is bounded, i.e., for $1 < p < \infty$. More generally, by Muckenhoupt's transplantation theorem [2, Theorem 1.6],

$$\Big(\int_0^\pi \Big| \sum m_{k+j} \, a_k \, P_k^{(\alpha,\beta)}(\cos\theta) \Big|^p \sin^{2\alpha+1}\frac{\theta}{2} \cos^{2\beta+1}\frac{\theta}{2} \, d\theta \Big)^{1/p}$$
$$\equiv \Big(\int_0^\pi \Big| \sum m_{k+j} \, b_k \, \phi_k^{(\alpha,\beta)}(\cos\theta) \Big|^p w_{\alpha,\beta,p}(\theta) \, d\theta \Big)^{1/p}$$
$$\approx \Big(\int_0^\pi \Big| \sum m_{k+j} \, b_k \, \cos k\theta \Big|^p w_{\alpha,\beta,p}(\theta) \, d\theta \Big)^{1/p} ,$$

where $P_k^{(\alpha,\beta)}$ are the Jacobi polynomials, $\phi_k^{(\alpha,\beta)}(\cos\theta)$ are the orthonormalized Jacobi functions with respect to $d\theta$, and

$$w_{\alpha,\beta,p}(\theta) = \sin^{(2-p)(\alpha+1/2)}\frac{\theta}{2} \cos^{(2-p)(\beta+1/2)}\frac{\theta}{2} .$$

Therefore, the above argument for cosine expansions also applies to Jacobi expansions provided the periodic Hilbert transform is bounded with respect to the weight function $w_{\alpha,\beta,p}$; hence, the analog of (1) holds for Jacobi expansions when

$$\frac{2\alpha+2}{\alpha+3/2} < p < \frac{2\alpha+2}{\alpha+1/2} , \qquad \alpha \ge \beta \ge -\frac{1}{2} .$$

(i) Can the above p-range be extended? By Muckenhoupt [2, (1.3)], a fixed shift is bounded for all p, $1 < p < \infty$.

(ii) Consider the corresponding problem for Laguerre expansions (for the appropriate setting see [1]); a fixed shift is easily seen to be bounded for all $p \ge 1$.

Both questions are of course trivial for $p = 2$ since $\ell^\infty = M^2$ by Parseval's formula.

References

[1] Gasper, G. and W. Trebels: On necessary multiplier conditions for Laguerre expansions, Canad. J. Math. 43 (1991), 1228 – 1242.

[2] Muckenhoupt, B.: Transplantation Theorems and Multiplier Theorems for Jacobi Series, Memoirs Amer. Math. Soc., Vol. 64, No. 356, Providence, R.I., 1986.

(Submitted on May 19, 1998)

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20. Question about Elliot's formula Generalization of Legendre's identity for complete elliptic integrals

Let E, K be the complete elliptic integrals. Then

$$K'E + KE' - KK' = \pi/2 \qquad (*)$$

This is the special case $p = r = -a+1/2$, $q = c+a-3/2$ in Elliott's identity (see Erdelyi e.a., Higher Transcendental Functions, Vol. 1, p. 85):

$$\begin{aligned} &F(p+\tfrac12, -r-\tfrac12, 1+p+q; z)F(-p+\tfrac12, r+\tfrac12; 1+q+r; 1-z) \\ &+F(p+\tfrac12, -r+\tfrac12, 1+p+q; z)F(-p-\tfrac12, r+\tfrac12; 1+q+r; 1-z) \\ &-F(p+\tfrac12, -r+\tfrac12, 1+p+q; z)F(-p+\tfrac12, r+\tfrac12; 1+q+r; 1-z) \\ &= \frac{\Gamma(p+q+1)\Gamma(q+r+1)}{\Gamma(p+q+r+\frac32)\Gamma(q+\frac12)} \qquad (**) \end{aligned}$$

Question 1. Is there a counterpart of Legendre's identity (*) for incomplete elliptic integrals?

Question 2. The Elliott identity (**) provides a generalization of the identity (*) to hypergeometric functions. The only handbook where I have seen this identity is Bateman vol. I. Has Elliott's identity been used or mentioned elsewhere in papers/books?

Question 3. Are there generalizations of the Elliott identity (**) to the ${}_pF_q$ case or to other generalizations of hypergeometric functions?

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21. Question on an exact solvable Schrödinger equation

What are all the Schrödinger equations that have exact solutions expressible in terms of the Kampé de Fériet function?

(Submitted on June 3, 1999)

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22. Question about Kampé de Fériet series

How to prove the following reduction identities for the Kampé de Fériet series:

$$\mathrm{F}^{1:1;3}_{1:0;2}\left(\begin{matrix}2\\5/2\end{matrix}\,\middle|\,\begin{matrix}1\\-\end{matrix}\,\middle|\,\begin{matrix}1,1,1\\2,2\end{matrix}\,\middle|\,x,x\right) = {}_2\mathrm{F}_1\left(\begin{matrix}1,1\\3/2\end{matrix}\,\middle|\,x\right)\,{}_3\mathrm{F}_2\left(\begin{matrix}1,1,1\\3/2,2\end{matrix}\,\middle|\,x\right), \tag{2}$$

$$\mathrm{F}^{2:1;3}_{2:0;2}\left(\begin{matrix}2,2\\5/2,3\end{matrix}\,\middle|\,\begin{matrix}1\\-\end{matrix}\,\middle|\,\begin{matrix}1,1,1\\2,2\end{matrix}\,\middle|\,x,x\right) = \left[{}_3\mathrm{F}_2\left(\begin{matrix}1,1,1\\3/2,2\end{matrix}\,\middle|\,x\right)\right]^2, \tag{3}$$

$$\mathrm{F}^{2:1;2}_{2:0;1}\left(\begin{matrix}2,2\\3,3\end{matrix}\,\middle|\,\begin{matrix}1\\-\end{matrix}\,\middle|\,\begin{matrix}1,1\\2\end{matrix}\,\middle|\,1,1\right) = 4\,{}_4\mathrm{F}_3\left(\begin{matrix}1,1,1,1\\2,2,2\end{matrix}\,\middle|\,1\right), \tag{4}$$

$$\mathrm{F}^{3:1;2}_{3:0;1}\left(\begin{matrix}2,2,2\\3,3,3\end{matrix}\,\middle|\,\begin{matrix}1\\-\end{matrix}\,\middle|\,\begin{matrix}1,1\\2\end{matrix}\,\middle|\,1,1\right) = 2\,{}_5\mathrm{F}_4\left(\begin{matrix}1,1,1,1,1\\2,2,2,2\end{matrix}\,\middle|\,1\right)? \tag{5}$$

Is it possible to generalize them?

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Miscellaneous

1. Postdoctoral Research Opportunity at NIST

This research opportunity focuses on improving numerical and symbolic computing support for the classical special functions in parallel and other advanced computational settings through the development of algorithms and mathematical software.

Emphasis in algorithm development is placed on functions of one or more complex variables. For example, a recurrence relation or differential equation can sometimes be solved in parallel to form a stable and effective algorithm in the complex domain. This approach has been applied successfully to Airy, Bessel, and other functions. The emphasis in software development is placed on the construction of robust and highly reliable packages and test procedures. An important component is the use of the Internet to provide an interactive capability in the dissemination of mathematical reference data for special functions. The further development of these topics will require skills in real and complex analysis, numerical analysis, classical special functions, approximation theory, and advanced computing. For further information, contact:

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The postdoctoral research program at NIST is administered by the National Research Council, Washington, DC. Only US citizens are eligible. The duration is two years. The application deadline is January 15, 2001. Further details on requirements and application procedure can be found at `http://www4.nas.edu/osep/rap.nsf/WebDocuments/Home+Page`.

Daniel Lozier
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2. Job opening for graduate student

4-year graduate student position "Special Functions and Dynamical Quantum Groups"

This concerns a NWO (Netherlands Organization for Scientific Research)-funded project to be carried out at the Technische Universiteit Delft, the Netherlands. The research group consists of Erik Koelink (Delft, the Netherlands), Hjalmar Rosengren (Gothenburg, Sweden), Ole Warnaar (Melbourne, Australia), and as external advisors Tom Koornwinder (Amsterdam, the Netherlands) and Don Zagier (Utrecht, the Netherlands).

A short description of the research proposal is the following: The purpose of this proposal is to investigate the relationship between the representation theory of dynamical quantum groups and the theory of special functions. Dynamical quantum groups are related to solutions of the dynamical Yang-Baxter equation and we focus our attention to the so-called trigonometric and elliptic solutions. We will study representations and co-representations and we intend to establish a fruitful link with classes of special functions, leading to new insights on both sides. In the trigonometric case we expect special functions of basic hypergeometric type, and in the elliptic case we expect special functions of elliptic hypergeometric type.

Candidates should have a degree in mathematics or physics, or obtain one in the near future. Please send an application (CV, list of publications if any, and names of referents) to

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For more information (salary, extended research description, teaching load, etc) see

`http://aw.twi.tudelft.nl/ koelink/oio.html`

or contact Erik Koelink.

Erik Koelink
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3. The SIAG/CST Prize

Call for Nominations
SIAM Activity Group on Control and Systems Theory (SIAG/CST) Prize

The SIAM Activity Group on Control and Systems Theory

will present the award at the SIAM Conference on Control and Its Applications, July 12-14, in San Diego. The prize, the second to be given, is awarded to a young researcher for outstanding research contributions, as determined by the prize committee, to mathematical control or systems theory. The contributions must be contained in a paper or papers published in English in peer-reviewed journals.

Eligibility. The awardee's work must be a significant research contribution to the mathematical theory of systems and control, as commonly defined in the mathematical and engineering literature. At least one of the papers containing this work must be published in English in a peer-reviewed journal, bearing a publication date within the award period, and such that at least one of the following two requirements is met at the publication date: either (1) the author is not more than 35 years old, or (2) not more than six years have elapsed since the author received a Ph.D. or equivalent degree.

Description of Award. The award consists of a plaque and a certificate containing the citation. The awardee is expected to attend the award ceremony and to present the award-winning work at the meeting.

Nominations. Nominations including a copy of the nominated paper(s) should be sent by February 28, 2001 to:

Professor Mary Ann Horn
Chair, SIAG/CST Prize Selection Committee
c/o A. G. Bogardo
SIAM
3600 University City Science Center
Philadelphia, PA 19104
Fax: 215-386-7999
E-mail: `bogardo@siam.org`

Selection Committee. The members of the selection committee for the award are Mary Ann Horn, Chair (Vanderbilt University);Marc Q. Jacobs (Air Force Office of Scientific Research); Daniel E. Koditschek (University of Michigan); Arthur J. Krener (University of California, Davis); and Steven I. Marcus (University of Maryland).

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4. SIAM Student Paper Prizes

The annual SIAM Student Paper Prizes will be awarded during the 2001 SIAM Annual Meeting, July 9-13, at the Town & Country Hotel in San Diego, California.

If you are a student or know of a student who would like to take part in the competition, here are the details:

The authors of the three best papers in applied and computational mathematics written by students and submitted to SIAM will receive a $1,000 cash prize and a framed calligraphed certificate as well as gratis registration for the meeting. There is no provision for travel expenses associated with the prize.

Papers must be singly authored and not previously published or submitted for publication to be eligible for consideration. To qualify, authors must be students in good standing who have not received their PhDs at the time of submission.

In submitting their work for publication, authors are asked to consider SIAM journals. However, student paper prize winners are not guaranteed publication in any SIAM journal; all papers submitted to SIAM journals are subject to the same refereeing process and standards.

Submissions to the student paper competition must be received in the SIAM office before February 16, 2001.

Submissions, which must be in English, can be sent by regular mail or fax. Each submission must include (1) an extended abstract NOT LONGER THAN 5 PAGES (including bibliography); (2) the complete paper, which will be used solely for clarification of any questions; (3) a statement by the student's faculty advisor that the paper has been prepared by the author indicated and that the author is a student in good standing; (4) a letter by the student's faculty advisor describing and evaluating the paper's contribution; and (5) a short biography of the student.

Submissions will be judged on originality, significance, and quality of exposition.

The winners will be notified by April 25, 2001.

Please direct your submission and any questions you may have to A. Bogardo at SIAM, 3600 University City Science Center, Philadelphia, PA 19104-2688; telephone (215) 382-9800; e-mail to `bogardo@siam.org`.

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About the Activity Group

The SIAM Activity Group on Orthogonal Polynomials and Special Functions consists of a broad set of mathematicians, both pure and applied. The Group also includes engineers and scientists, students as well as experts. We have around 150 members scattered about in more than 20 countries. Whatever your specialty might be, we welcome your participation in this classical, and yet modern, topic. Our WWW home page is:

`http://math.nist.gov/opsf/`

which currently covers the topics: Conference Calendar; Books, Conference Proceedings, etc.; Compendia, tools, etc.; Compiled booklist on OP-SF; Meeting Reports; Projects; Problems; Personal, Obituaries, etc.; History; Positions available; Miscellaneous; Memberlist; Preprint Servers and Links to WWW pages of interest to members. This is a convenient point of entry to all the services provided by the Group. Our Webmaster is Bonita Saunders (`bonita.saunders@nist.gov`).

The *Newsletter* is a publication of the Activity Group. It appears three times a year and is mailed by SIAM. Back issues are accessible at:

`http://www.imn.htwk-leipzig.de/~koepf/siam.html`

To receive the *Newsletter*, you must be a member of SIAM and of the Activity Group. SIAM has several categories of membership, including low-cost categories for students and residents of developing countries. For current information on SIAM and Activity Group membership, contact:

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The Activity Group also sponsors an electronic news net, called the OP-SF Net, which is transmitted periodically by SIAM. It is provided as a free public service; membership in SIAM is not required. The OP-SF Net Editor is Martin Muldoon (muldoon@yorku.ca). The Net provides fast turnaround compared to the *Newsletter*. To receive the Net, send your name and email address to poly-request@siam.org. To contribute a news item to the Net, send email to poly@siam.org with a copy to the OP-SF Net Editor. Please note that submissions to the Net are automatically considered for the *Newsletter*, and vice versa, unless the contributor requests otherwise. Back issues can be obtained by anonymous ftp from ftp.wins.uva.nl in the directory:

pub/mathematics/reports/Analysis/koornwinder/opsfnet.dir

or at the WWW addresses:

http://turing.wins.uva.nl/ thk/opsfnet

http://www.math.ohio-state.edu/JAT

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Finally, the Activity Group operates an email discussion group, called OP-SF Talk. To subscribe, send the email message

subscribe opsftalk Your Name

to listproc@nist.gov . To contribute an item to the discussion, send email to opsftalk@nist.gov . The archive of all messages is accessible at:

http://math.nist.gov/opsftalk/archive

How to Contribute to the Newsletter

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preferably by e-mail, and in LaTeX format. Other formats are also acceptable and can be submitted by e-mail, regular mail or fax.

Deadline for submissions to be included in the October issue 2000 is September 15, 2000.

Activity Group: Addresses

Address corrections: Current Group members should send their address corrections to Marta Lafferty (lafferty@siam.org). Please feel free to contact any of the Activity Group Officers. Their addresses are:

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