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IMAGE

Serving the International Linear Algebra Community

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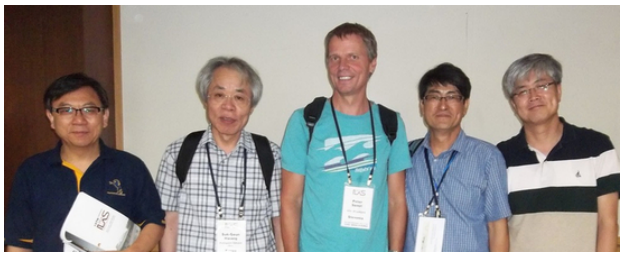
The 19th Conference of the International Linear Algebra Society Sungkyunkwan University, Seoul, South Korea, August 6–9, 2014

Report by Suk-Geun Hwang, In-Jae Kim and Sang-Gu Lee

The Korean Linear Algebra Society was honored to host the 19th Conference of the International Linear Algebra Society (ILAS) at Sungkyunkwan University, Seoul, South Korea from August 6 to August 9, 2014. The conference, whose theme was *Solidarity in Linear Algebra,* was attended by 348 participants from 41 different countries, making the conference highly international. At the conference, 262 talks were presented, including 12 plenary talks. The conference was supported by many sponsors including several Korean organizations such as Sungkyunkwan University, Pusan National University, Seoul ICM 2014, the National Institute for Mathematical Science (NIMS), the National Research Foundation (NRF), the Seoul Metropolitan Government, and the Korea Tourism Organization, as well as ILAS, the SIAM Activity Group on Linear Algebra, Elsevier, and Taylor & Francis. The ILAS Conference was one of the satellite conferences of ICM 2014.

There were three social events prepared by the local organizing committee. The first was the welcome reception which was held the night before the conference, Tuesday, August 5, along with early registration. In the afternoon of Friday, August 8, 187 participants joined the two excursions: 74 participants went to the Seoul City excursion and 113 participants went to the Demilitarized Zone (DMZ) excursion. A lunch sponsored by Elsevier was served before the excursions. On the evening of the same day, 212 participants attended the conference banquet where a very special letter from Hans Schneider was read by Richard Brualdi.



Local Organizers with ILAS President: Gi-Sang Cheon, Suk-Geun Hwang (Co-Chair), Peter Šemrl, Sang-Gu Lee (Co-Chair), and Hyun-Min Kim.

Almost all morning and afternoon sessions started with plenary talks reflecting recent developments and new research relevant to linear algebra. There were 12 plenary addresses:

- Ravindra Bapat (LAMA Speaker), Indian Statistical Institute, Delhi, India, "Square distance matrix of a tree."
- Peter Benner, Max Planck Institute, Magdeburg, Germany, "Solving Large-Scale Matrix Equations: Recent Progress and New Applications."
- Dario Bini (LAA Lecturer), University of Pisa, Italy, "Exploiting matrix structures in polynomial eigenvalue problems: Computational Issues."
- Shaun Fallat (Taussky-Todd Lecturer), University of Regina, Canada, "On the eigenvalues of positive matrices: In the spirit of Taussky Unification."
- Andreas Frommer (SIAG/LA Lecturer), University of Wuppertal, Germany, "Arnoldi approximation for matrix functions: how to restart and when to stop."
- Stephane Gaubert, INRIA, Domaine de Voluceau, France, "From Tropical Linear Algebra to Zero-Sum Games."
- Chi-Kwong Li, College of William and Mary, USA, "Some matrix techniques, results, and problems in quantum information science."
- Yongdo Lim, Sungkyunkwan University, South Korea, "Monotonicity of the Karcher mean."
- Panayiotis Psarrakos, National Technical University of Athens, Greece, "Travelling from matrices to matrix polynomials."
- Vladmir Sergeichuk, Institute of Mathematics, Kiev, Ukraine, "Classification problems for systems of forms and linear mappings."
- Bernd Sturmfels, University of California, Berkeley, USA, "Beyond Linear Algebra."
- Tin-Yau Tam, Auburn University, USA, "Some matrix asymptotic results and their Lie counterparts."

In addition to the plenary talks there were 8 invited minisymposia, 14 contributed minisymposia, and 72 contributed talks. The 8 invited minisymposia with their organizers were:

- Combinatorial Problems in Linear Algebra, Richard A. Brualdi (USA) and Geir Dahl (Norway)
- Matrix Inequalities, Fuzhen Zhang (USA) and Minghua Lin (Canada)
- Spectral Theory of Graphs and Hypergraphs, Vladimir S. Nikiforov (USA)
- Tensor Eigenvalues, Jia-Yu Shao (China) and Liqun Qi (Hong Kong)
- Quantum Information and Computing, Chi-Kwong Li (USA) and Yiu Tung Poon (USA)
- Riordan arrays and Related Topics, Gi-Sang Cheon (South Korea) and Donatella Merlini (Italy)
- Nonnegative Matrices and Generalizations, Judi McDonald (USA)
- Toeplitz Matrices and Operators, Torsten Ehrhardt (USA)




The 14 contributed minisymposia and their organizers were:

- Structured Matrix Equations, Eric King-wah Chu (Australia)
- Inverse Spectral Problems, Carlos M. Fonseca (Kuwait)
- Matrix Geometry, Miklos Palfia (Japan) and Takeaki Yamazaki (Japan)
- Teaching Linear Algebra, Ajit Kumar (India) and Abraham Berman (Israel)
- Algebraic Combinatorics and Combinatorial Matrices, Han Hyuk Cho (South Korea), Jang Soo Kim (South Korea), and Seungjin Lee (South Korea)
- Linear Least Squares and Applications, Yimin Wei (China) and Marc Baboulin (France)
- Generalized Laplacian and Green Matrices, A. Carmona (Spain), A.M. Encinas (Spain), and M. Mitjana (Spain)
- Eigenvalue Computations and Applications, Ren-Cang Li (USA)
- Inequalities in Matrices, Operators, and Lie Groups, Natalia Bebiano (USA) and Tin-Yau Tam (USA)
- Matrix Methods in Computational Systems Biology and Medicine, Konstantin Fackeldey (Germany)
- Solution of Sylvester-like Equations and Canonical Forms, Stefan Johansson (Sweden)
- Generalized Matrix Inverses and Applications, Jeffrey Hunter (New Zealand) and Minerva Catral (USA)
- Sign Pattern Matrices, Zhongshan Li (USA) and Frank Hall (USA)
- Recent Developments in Linear Preserver Problems, LeRoy Beasley (USA) and Seok-Zun Song (South Korea)

The scientific organizing committee consisted of Suk-Geun Hwang (Chair, South Korea), Nair Abreu (Brazil), Tom Bella (USA), Rajendra Bhatia (India), Richard A. Brualdi (USA), Man-Duen Choi (Canada), Nicholas J. Higham (UK), Leslie Hogben (USA), Stephen Kirkland (Canada), Sang-Gu Lee (South Korea), Helena Šmigoc (Ireland), and Fuzhen Zhang (USA). More information on the conference may be found at the conference website, `http://www.ilas2014.org`.

Some records of the conference can be found at `http://matrix.skku.ac.kr/2014-Album/ILAS-2014/` and the official group photo can be downloaded from `http://matrix.skku.ac.kr/2014-Album/ILAS-2014/ILAS-2014-Group-Photo.JPG`. The program book of the conference can be downloaded from `http://matrix.skku.ac.kr/ILAS-Book/index.htm`. Slide shows of photos can be seen in `http://youtu.be/asJfRFYWPrk`, `http://youtu.be/bidJNagmRXQ`, `http://youtu.be/10fDqWA-vVA`, `http://youtu.be/6IlS8U6i_8E`, and `http://youtu.be/UMwLCtSGByI`.

At the closing of the conference, ILAS President Peter Šemrl acknowledged the local organizers for their hard work, noting that the ILAS conference was very well organized, and that in the last two days of the conference he talked to many participants that shared the same sentiment.

The next ILAS meeting, the 20$^{\text{th}}$ ILAS Conference, will be held July 11–15, 2016 in Leuven, Belgium.


Participants of the 19th ILAS Conference

The International Conference on Trends and Perspectives in Linear Statistical Inference (LINSTAT'2014) Linköping, Sweden, August 24–28, 2014

Report by Francisco Carvalho and Katarzyna Filipiak

The 2014 edition of LINSTAT – the International Conference on Trends and Perspectives in Linear Statistical Inference – was held at the Linköping University, Sweden. Linköping is a XII century city in the core of the Östergötland County, well-known for its university and its high-technology industry. With its beautiful surroundings and privileged conditions to promote conferences, Linköping made possible a get-together with highly regarded specialists and researchers interested in the topics selected for these conferences.

The Scientific Committee of LINSTAT'2014 was chaired by Dietrich von Rosen (Sweden) and the Local Organizing Committee was chaired by Martin Singull (Sweden).

LINSTAT 2014 *Group Photo*

The purpose of the meeting was to bring together researchers sharing an interest in a variety of aspects of statistics and its applications, as well as matrix analysis and its applications to statistics, and to offer a venue to discuss current developments in these subjects.

The plenary talks by invited speakers were delivered by Alan Agresti (USA), S. Ejaz Ahmed (Canada), Dennis Cook (USA), Sat Gupta (USA), Lynn LaMotte (USA), Emmanuel Lesaffre (Belgium), Yonghui Liu (China), Thomas Mathew (USA), Jamal Najim (France), Muni S. Srivastava (Canada), Yongge Tian (China) and Júlia Volaufová (USA), as well as the winners of the Young Scientists Awards of LINSTAT'2012: Maryna Prus (Germany), Jolanta Pielaszkiewicz (Sweden), Fatma Sevinç Kurnaz (Turkey) and Alena Bachratá (Slovakia).

Over 85 talks and 9 posters were presented, including a special session devoted to 30 years of the Polish-Nordic column spaces (organized by S. Puntanen). Other special sessions included Small Area Estimation (S. Haslett), Computation-Intensive Methods in Regression Models (M. Tez), the use of Kronecker Products in Statistical Modeling (A. Roy), Bayesian Inference for Complex Problems (M. Villani), Statistics in Life Sciences (M. Fonseca), Statistical Methods for Complex, High-Dimensional Data (T. Pavlenko), Linear Models Applied to Complex Problems (T. Holgersson) and Design and Analysis of Experiments (A. Markiewicz).

OBITUARY

Last Words of Hans Schneider 1927–2014

Hans Schneider, a research mathematician who devoted much of his academic life to the revival of the classical field of linear algebra (aka matrix theory), died on October 18, 2014, aged 87. The cause was cancer of the esophagus.[1]

He was the author of about 160 research papers that covered many aspects of theoretical linear algebra, but particularly the theory of nonnegative matrices, an area with multiple applications. His first paper was submitted at the age of 24, his last within a year of his death. He soon discovered that research with others was productive and this led to joint publications with about 80 collaborators. In his later years, Hans would express contentment that his contributions have been taken up and developed by others, even when his original work may have been forgotten, a difficult stage to achieve.

When Hans was being considered for tenure in the mathematics department at the University of Wisconsin-Madison, a famous Russian algebraist was visiting. Hans was later told that this mathematician had informed a member of the tenure committee that in Russia, "we expect every mathematician to know linear algebra but it is not a field for research." Hans was rescued by members of his department who were outside his field. This incident left a deep mark on Hans, as he realized what he was up against, and made him committed to the revival of linear algebra as a field of research.

In 1967, he was elected Chair of the Mathematics Department, the second biggest in the University of Wisconsin, at the relatively early age of 39. He felt confident before this that he could deal with faculty problems, but soon regretted having taken this position, because he felt incompetent to deal with the student movement that was then sweeping North American campuses. He relinquished this position in 1969 with some relief.

In 1972, Hans was given the chance of being editor-in-chief of the four-year-old struggling journal "Linear Algebra and its Applications," led formerly by Alan Hoffman, a great mathematician. This is the activity for which Hans is probably best known in the profession. This commercial journal presented him with an opportunity to redress the neglect of this field by established national mathematical societies. When he retired from this position 40 years later the journal had four editors-in-chief and received about 1200 submissions annually, leading to about 5,000 pages of print.

Hans, together with some colleagues, established the International Matrix Group in 1987, which three years later was incorporated as the International Linear Algebra Society (ILAS). He was its first president from 1990 to 1996. The 19^{th} meeting of the Society was held in Korea in August 2014. Hans realized that in the mathematical culture, groups tend to form around distinguished individuals. These groups flourish for a time and then typically disappear. In order to give the society permanence, a very formal structure with annual elections was established for ILAS. He wanted to make it harder to discontinue meetings in linear algebra than to continue them. Currently ILAS has about 400 members in more than 20 countries and publishes two journals. In recent years there has been much criticism of the high price of journals published by commercial publishers. Hans felt that established mathematical societies have only themselves to blame for not giving linear algebra the support it needed.

Hans Schneider was born in Vienna, Austria, on January 24, 1927 as the only child of two dentists, Hugo and (Isa)Bella (Saphir) Schneider. He led a comfortable middle class existence until the occupation of Austria by Nazi Germany in March 1938. His family had no religious affiliation but were Jewish under the Nazi racial laws. His father was one of the first to realize that further existence in Austria would be impossible. He saw that this was not a return to a limited but tolerable ghetto existence, but a new form of persecution. The family fled into an illegal, insecure, and generally miserable existence in Czechoslovakia, and then found themselves in Poland when the city in which they were living was annexed by that country following the Munich Agreement in October 1938.

In November 1938, Hans entered the Quaker school in Eerde, Netherlands, as the result of rather desperate entreaties by his mother to the Dutch authorities. Some months later, his parents gained admission to the UK thanks to special conditions arranged by the then home secretary, Lord Templewood (aka Sir Samuel Hoare), who (by his own account) had a high opinion of the Viennese school of doctors and dentists and a low opinion of the corresponding British schools. Hans was reunited with his parents in Edinburgh in August 1939, three weeks before the outbreak of the war in Europe. He ascribed his survival to his father's decisive and risky action to flee Austria followed by the good luck of leaving three countries a few months ahead of their occupation by Nazi Germany. He felt great gratitude to the British people's determination to fight Hitler even when all seemed lost.

In Edinburgh, Hans received a first-rate Scottish education at George Watson's Boys College (the equivalent of an American high school) followed by four years at Edinburgh University where he graduated M.A. with First Class Honours in 1948. He obtained a position as Scientific Officer at the Royal Observatory, Edinburgh, but was fired within two years because he had broken an expensive brand new astronomical instrument. He then returned to mathematics and had

[1] This obituary was written by Hans, who was terminally ill, on May 31, 2014. It was read by Richard Brualdi at the Banquet of the 19^{th} Conference of ILAS. A memorial page has been set up as a tribute to ILAS's founding president: `http://www.ilasic.org/misc/memorial.html`

the good fortune to be the graduate student at Edinburgh University of A.C. Aitken, an idiosyncratic mathematical genius. Under pressure because of his growing family, he wrote a Ph.D. thesis within 18 months and was appointed to an assistant lectureship by S. Verblunsky at Queen's University, Belfast. In 1959 he emigrated to a position at the University of Wisconsin–Madison, where he stayed for the rest of his career. Travel was a research tool; Hans held visiting positions at several universities, including the Technion, Israel, the Technical University of Munich, and the University of Birmingham (UK). He retired from his tenure position as J.J. Sylvester Professor in the year 1993. Hans would carefully say that he retired from teaching, implying that he was not retired as a mathematician.

In 1948, Hans married Miriam Wieck, a professional violinist and member of a famous musical family. She was his constant companion and support in a marriage that lasted more than 66 years. He is survived by his wife Miriam, their three children, Barbara (Daryl), Peter (Hope), Michael (Laurie) and six grandchildren, David and Daniel Caswell, Hannah and Rebecca Schneider, Carson Rose and Kurt Schneider.

JOURNAL ANNOUNCEMENT

Special Issue: Legacy of Hans Scheinder

The Editors-in-Chief of the journal *Linear Algebra and its Applications (LAA)* are pleased to announce a special issue

THE LEGACY OF HANS SCHNEIDER

in recognition of the enormous contributions of Hans Schneider to the journal (forty years as an Editor-in-Chief), to research in linear algebra and related areas (nearly 200 papers over more than 60 years, and still continuing), and to the linear algebra community (organizer of the International Linear Algebra Society and its founding president). We especially welcome contributions that have been influenced by the work of Hans Schneider.

Papers should be submitted by December 31, 2014 via the Elsevier Editorial System (EES): `http://ees.elsevier.com/~laa` choosing the special issue indicated above and any one of the three Editors-in-Chief of *LAA*.

ILAS NEWS

2014 ILAS Elections

Nominated for a three-year term, beginning March 1, 2015, as ILAS Secretary/Treasurer is: Leslie Hogben, USA.

Nominated for the two open three-year terms, beginning March 1, 2015, as "at-large" members of the ILAS Board of Directors are: Geir Dahl, Norway; Betrice Meini, Italy; Simo Puntanen, Finland; and Henry Wolkowicz, Canada.

Many thanks to the Nominating Committee: Dario Bini, Shaun Fallat (chair), Marko Huhtanen, Rachel Quinlan, and Xingzhi Zhan.

Electronic voting will be implemented using Votenet Solutions (the same company ILAS has used for elections since 2011). Voting concludes January 16, 2015. If you have not received your electronic ballot, please contact Leslie Hogben: hogben@aimath.org

UPCOMING CONFERENCES AND WORKSHOPS

Structured Matrices and Tensors: Analysis, Algorithms and Applications Taipei, Taiwan, December 8–11, 2014

Structured matrices and tensors occur in many disciplines in applied mathematics and engineering. Fast algorithms for structured matrices and tensors are of particular importance in data analysis, and signal and image processing. This conference has two major objectives. (1) The intention is to improve the dialogue and collaboration between matrix and tensor theoreticians, and computational scientists. (2) The goal is to reduce the gap between researchers working on the fundamentals and those working on real-life applications, so that emerging applications will stimulate new theoretical research and the better theoretical tools will in turn be exported back to the various application fields. This meeting is the 4^{th} of a series of meetings on structured matrices with the first three held in Hong Kong in 2002, 2006 and 2010.

The Organizing Committee consists of: Raymond Chan (Chinese U. of Hong Kong), I-Liang Chern (National Central U.), Tsung-Ming Huang (National Taiwan Normal U.), Wen-Wei Lin (National Chiao Tung U.), Michael Ng (Hong Kong Baptist U.), Weichung Wang (National Taiwan U.). Further information can be found at: `https://sites.google.com/site/smtaaa14/`.