



13th International Workshop on Matrices and Statistics

Będlewo, Poland
August 18–21, 2004

Program and abstracts

Organizers

- Stefan Banach International Mathematical Center, Warsaw
- Committee of Mathematics of the Polish Academy of Sciences, Warsaw
- Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań
- Institute of Socio-Economic Geography and Spatial Management, Faculty of Geography and Geology, Adam Mickiewicz University, Poznań
- Department of Mathematical and Statistical Methods, Agricultural University, Poznań

This meeting has been endorsed by the International Linear Algebra Society.

Purpose

The purpose of this Workshop is to stimulate research and, in an informal setting, to foster the interaction of researchers in the interface between statistics and matrix theory. This Workshop will include the presentation of both invited and contributed papers on matrices and statistics. It is expected that many of these papers will be published, after refereeing, in a Special Issue of *Linear Algebra and its Applications* associated with this Workshop.

The workshop will celebrate Ingram Olkin's 80th birthday. Professor Olkin is a world-wide leading expert in statistics. Although his prime research focus is multivariate statistics, his research contributions cover an unusually wide range from pure mathematics to educational statistics. Many of his papers and books are classics in their fields, like his book with Albert Marshall on majorization and related distributional and inequality results. His statistical work has applications in medicine, and his book with Larry V. Hedges on meta-analysis has become the basic methodology for combining the results of independent studies. His bibliography includes nearly 200 publications, five authorized books, seven edited books, and two translated books. He has served as a member of editorial boards of some major statistics journals as well as of *Linear Algebra and Its Applications*. Professor Ingram Olkin has promoted nearly forty PhD students in pure and applied statistics and in statistical methods in educational research.

Previous workshops

The previous twelve Workshops were held as follows:

- Tampere, Finland: August 1990.
- Auckland, New Zealand: December 1992.
- Tartu, Estonia: May 1994.
- Montréal, Québec, Canada: July 1995.
- Shrewsbury, England: July 1996.
- Istanbul, Turkey, August 1997.
- Fort Lauderdale, Florida, USA, December 1998, in Celebration of T. W. Anderson's 80th Birthday.
- Tampere, Finland, August 1999.
- Hyderabad, India, December, 2000 in Celebration of C.R. Rao's 80th Birthday.
- Voorburg, The Netherlands, August 2001.
- Lyngby, Denmark, August 2002, in Celebration of G.P.H. Styan's 65th Birthday.
- Dortmund, Germany, August 5-8, 2003.

Forthcoming workshop

14th International Workshop on Matrices and Statistics to be held at Massey University, Albany Campus, Auckland, New Zealand, March 29 – April 1, 2005.

The Workshop will include invited and contributed talks. It is intended that refereed Conference Proceedings will be published.

Further details will become available on the conference website <http://iwms2005.massey.ac.nz/>.

The website will be updated on a regular basis.

IWMS-2005 is a Satellite Conference to the 55th Biennial Session of the International Statistical Institute to be held in Sydney April 5 – 12, 2005.

The Local Organising Committee is Chaired by Jeff Hunter <j.hunter@massey.ac.nz>.

The International Organizing Committee consists of

- George Styan (Chair) <styan@math.mcgill.ca>,
- Hans Joachim Werner (Vice-Chair) <werner@united.econ.uni-bonn.de>,
- Simo Puntanen <Simo.Puntanen@uta.fi>.

Organizing Committees

The International Organizing Committee for this Workshop comprises

- R. William Farebrother (Shrewsbury, England),
- Simo Puntanen (Tampere, Finland; chair),
- George P. H. Styan (Montral, Canada; vice-chair),
- Hans Joachim Werner (Bonn, Germany).

The Local Organizing Committee comprises

- Jan Hauke, Institute of Socio-Economic Geography and Spatial Management, Faculty of Geography and Geology, Adam Mickiewicz University, Poznań,
- Augustyn Markiewicz (chair), Department of Mathematical and Statistical Methods, Agricultural University, Poznań,
- Tomasz Szulc, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań,
- Waldemar Wołyński, Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznań.

Program

Tuesday, August 17, 2004

13:00–15:00 Lunch

14:00–19:00 Registration

19:00– Reception

Wednesday, August 18, 2004

8:00–9:00 Breakfast

Opening:

9:00–9:20 *Z. Palka* - Dean of the Faculty of Mathematics and Computer Sciences of Adam Mickiewicz University

Session I – Chair with comments *G.P.H. Styan*

9:20–10:05 Opening lecture – *Gene H. Golub*: Numerical methods for solving least squares problems with constraints

10:05–10:15 Introduction to Nokia Lecturer – *G.P.H. Styan*

10:15–11:30 Nokia Lecture – *Ingram Olkin*: Inequalities: some probabilistic, some matrix, and some both

11:00–11:30 Coffee break

Session II – Chair *R. Bru*

11:30–12:00 *L. Elsner*: Nonnegative matrices, max-algebra and applications

12:00–12:30 *V. Mehrmann*: Numerical solution of the eigenvalue problem for the Anderson Model

12:30–13:00 *C. Johnson*: Words in two positive definite letters

13:00–15:00 Lunch

Session IIIa – Chair *V. Mehrmann*

15:00–15:20 *U. Rothblum*: One-dimensional optimal bounded-shape partitions for Schur convex sum objective functions

15:20–15:40 *K. Ziętak*: Family of Gander's methods and approximation of matrices

15:40–16:00 *I. Wróbel*: On the numerical range of powers of matrices

16:00–16:20 *D. Wojtera-Tyrakowska*: Some properties of equiradial and equimodular sets

16:20–16:40 *V. Prokip*: On common divisors of matrices over principal ideal domain

Session IIIb – Chair *G. Trenkler*

- 15:00–15:20 *R. Kala*: Two local operators and the BLUE
 15:20–15:40 *H. Drygas*: Linear minimax-estimation in the three parameter case
 15:40–16:00 *Y. Takane*: Two interesting metric matrices in statistics
 16:00–16:20 *J. Isotalo*: Linear prediction sufficiency for new observations in the general Gauss–Markov model
 16:20–16:40 *P. Porzjik*: On linear sufficiency with respect to given parametric functions

16:40–17:10 Coffee break**Session IVa** – Chair *E.P. Liski*

- 17:10–17:30 *T. Kollo*: Multivariate skewness and kurtosis measures
 17:30–17:50 *H. Oja*: Some notes on scatter matrices and independent component analysis (ICA)
 17:50–18:10 *S. Sirkia*: One-sample spatial sign and rank methods
 18:10–18:30 *E. Ollila*: Unitary invariant random Hermitian matrices and complex elliptical distributions
 18:30–18:50 *I. Malinowska*: Estimation of location and scale parameters using k -th record values
 18:50–19:10 *T. Benesch*: Adaptive Designs for Clinical Trials: An Overview

Session IVb – Chair *R. Kala*

- 17:10–17:30 *H. Naseri*: Linear prediction for electricity consumption with Levy distribution
 17:30–17:50 *R. Covas*: Exact distributions for certain linear combinations of Chi-Squares
 17:50–18:10 *T. Ostrowski*: Population equilibrium and its fitness in evolutionary matrix games
 18:10–18:30 *M. Wilkos*: Some properties of sample characteristics from non-negative data
 18:30–18:50 *K. Szuster*: Almost sure Central Limit Theorem for subsequences
 18:50–19:10 *C.A. Coelho*: The singular value decomposition as a basic tool in generalized canonical analysis and related linear models

19:10– Dinner

Thursday, August 19, 2004

8:00–9:00 Breakfast

Session V – Chair *T. Caliński*

9:00– 9:30 *T.W. Anderson*: Asymptotic distribution of a set of linear restrictions on regression coefficients

9:30–10:00 *J.K. Baksalary*: Relationships between partial orders of Hermitian matrices and their powers

10:00–10:20 *S. Puntanen*: On decomposing the Watson efficiency of ordinary least squares in a partitioned weakly singular linear model

10:20–11:00 *G.P.H. Styan*: Inequalities and equalities for the generalized efficiency function in orthogonally partitioned linear models

11:00–11:30 Coffee break

Session VI – Chair *H.J. Werner*

11:30–12:00 *B.K. Sinha*: Some combinatorial aspects of a counterfeit coin problem

12:00–12:30 *C.M. Cuadras*: Parametric multiple correspondence analysis

12:30–13:00 *G. Tusnady*: Reconstruction of Kauffman networks applying trees

13:00–13:30 *B. Uhrin*: A problem in multivariate analysis

13:30–15:00 Lunch

15:00–18:30 Excursion – Kórnik Castle

19:00– Conference Dinner

Friday, August 20, 2004

8:00–9:00 Breakfast

Session VII – Chair *B.K. Sinha*

9:00– 9:30 *J. Kunert*: On optimal cross-over designs when carry-over effects are proportional to direct effects

9:30–10:00 *P. Druilhet*: Optimal designs for total effects

10:00–10:30 *R.J. Martin*: Optimal experimental designs when most treatments are unreplicated

10:30–11:00 *N.K. Mandal*: Optimum choice of covariates in BIBD setup

11:00–11:30 Coffee break

Session VIII – Chair *H. Oja*

- 11:30–12:00 *T. Ledwina*: Data driven score test of fit for semiparametric homoscedastic linear regression model
 12:00–12:30 *E.P. Liski*: The MDL model choice for linear regression
 12:30–13:00 *P. Major*: Sharp estimates on the tail behaviour of some random integrals and their application in statistics

13:00–15:00 Lunch**Session IXa** – Chair *J. Kunert*

- 15:00–15:20 *C. Stępniaik*: Canonical form of a linear model and its applications
 15:20–15:40 *M. Grzdziel*: Quadratic subspaces and construction of admissible estimators of variance components
 15:40–16:00 *K. Filipiak*: On optimality of binary designs under interference models
 16:00–16:20 *T. Nahtman*: Permutation invariant covariance matrices
 16:20–16:40 *L. Koskela*: Analysis of growth curve data by using cubic smoothing splines

Session IXb – medical – Chair *J. Hauke*

- 15:00–15:45 *Ingram Olkin* lecture part I
 15:50–16:00 break
 16:00–16:40 *Ingram Olkin* lecture part II

16:40–17:10 Coffee break**Session Xa** – Chair *J.J. Hunter*

- 17:10–17:30 *A. Klein*: An explicit expression for the Fisher information matrix of a multiple time series process
 17:30–17:50 *J. Ledoux*: Criteria for the comparison of discrete-time Markov chains
 17:50–18:10 *I. Traat*: Bias of regression estimator in survey sampling
 18:10–18:30 *P. Comon*: Blind identification of linear mixtures
 18:30–18:50 *T. Górecki*: Sequential method in discriminant analysis

Session Xb – Chair *L. Elsner*

- 17:10–17:30 *B. Schaffrin*: Reliability analysis in linear models
 17:30–17:50 *R. Szwedek*: Interpolation of measure of non-compactness and applications to spectral theory
 17:50–18:10 *A. Maćkiewicz*: A new rank revealing tri-orthogonalization algorithm and its applications
 18:10–18:30 *M. Niezgoda*: On the structure of a class of normal decomposition systems
 18:30–18:50 *Y. Tian*: On projectors with respect to seminorms

Session Xc – medical – Chair *J. Hauke*17:10–17:50 *I. Roterman-Konieczna (SAS)*: Survival analysis in SAS

17:50–18:00 break

18:00–18:30 *J. Hauke and W. Wołyński*: How to avoid an overinterpretation of the results of statistical analyzes in medical research**Presentation** – plenary session19:00–19:20 *SAS software presentation***19:30– Barbecue****Saturday, August 21, 2004****8:00–9:00 Breakfast****Session XI** – Chair *G.H. Golub*9:00– 9:30 *R. Bru*: Schwarz iterations for singular systems of Markov chains9:30–10:00 *J.J. Hunter*: Mixing times and their application to perturbed Markov chains10:00–10:30 *D. von Rosen*: Some results on patterned matrices10:30–11:00 *H. Yanai*: Non-negative determinant of a rectangular matrix: Its definition and applications to multivariate data analysis**11:00–11:30 Coffee break****Session XII** – Chair *S. Puntanen*11:30–12:00 *H.J. Werner*: BLUPs and BLIMBIPs in the general Gauss–Markov model12:00–12:30 *J. Gross*: Restricted ridge estimation12:30–13:00 *J.T. Mexia and M. Fonseca*: Statistical analysis of normal orthogonal models with emphasis on their algebraic structure in view of obtaining efficient statistics for inference13:00–13:30 *W. Ratajczak*: Spectral matrix decomposition in geographical research**13:30–15:00 Lunch**

Mitra session – Chair *J.K. Baksalary*

15:00–15:20 *G. Trenkler*: On generalized quadratic matrices

15:20–15:40 *P. Kik*: Characterizations of the commutativity of projectors referring to generalized inverses of their sum and difference

15:40–16:00 *K. Chylińska*: A specific form of the generalized inverse of a partitioned matrix useful in econometrics

16:00–16:20 *A. Kuba*: Invariance of matrix expressions with respect to specific classes of generalized inverses

16:20–16:40 *O.M. Baksalary*: Further generalizations of a property of orthogonal projectors

16:40–17:00 **Closing**

17:00–17:30 Coffee break

17:30–19:00 *Farewell - informal discussions*

19:00– Dinner