The 25<sup>th</sup> International Workshop on Matrices and Statistics (IWMS'2016) will be held on June 6-9, 2016 in the city of Funchal at the beautiful Madeira Island, the Pearl of the Atlantic.

The purpose of the workshop is 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 offer them a possibility to discuss current developments in these subjects. The workshop will bridge the gap among statisticians, computer scientists and mathematicians in understanding each other's tools. We anticipate that the workshop will stimulate research, in an informal setting, and foster the interaction of researchers in the interface between matrix theory and statistics.

Some emphasis will be put on related numerical linear algebra issues and numerical solution methods, relevant to problems arising in statistics.

The workshop will include invited talks given by

- Alan Agresti (USA)
- Rosemary A. Bailey (UK)
- Radosław Kala (Poland)
- Alexander Kovačec (Portugal)
- Jianxin Pan (UK)

as well as two special sessions:

- **Session devoted to the 75<sup>th</sup> birthday of Professor Jeffrey J. Hunter**
  Chair of this session is Peter G. Taylor (Australia) with invited talks from:
  - Jeffrey J. Hunter (New Zealand)
  - Tuğrul Dayar (Turkey)
  - Steve Kirkland (Canada)
  - Guy Latouche (Belgium)
  - Peter G. Taylor (Australia)

- **The Memorial Session of Ingram Olkin**
  Chair of this session is Hans Joachim Werner (Germany) with invited talks from:
  - Hans Joachim Werner (Germany)
  - Jeffrey J. Hunter (New Zealand)
  - Simo Puntanen (Finland)
  - Michael Greenacre (Spain): video

The following minisymposia devoted to cutting edge research topics will be held during the workshop:

- Magic Squares, Prime Numbers and Postage Stamps
  organized by Ka Lok Chu (Canada)
- Multivariate Linear Models
  organized by Katarzyna Filipak (Poland)
- Inequalities in Matrix Theory and Probability
  organized by Alexander Kovačec(Portugal)
- Methods for Modelling Correlated and Complex Data
  organized by Jianxin Pan (UK)
- Estimation and Testing in Linear Models
  organized by Roman Zmyślony (Poland)

## Committees and Organizers of IWMS'2016

### The International Scientific Committee

- Simo Puntanen (Finland) - Chair
- George P.H. Styan (Canada) - Honorary Chair
- Júlia Volaufová (USA) - Vice-Chair
- S. Ejaz Ahmed (Canada)
- Katarzyna Filipiak (Poland)
- Jeffrey J. Hunter (New Zealand)
- Augustyn Markiewicz (Poland)
- Dietrich von Rosen (Sweden)
- Hans Joachim Werner (Germany)

### The Organizing Committee

- Francisco Carvalho (Portugal) - Chair
- Katarzyna Filipiak (Poland) - Vice-Chair
- Ana Maria Abreu (Portugal)
- Daniel Klein (Slovakia)

### Organized by

- Instituto Politécnico de Tomar
- Universidade da Madeira

### Supported by:

- CMA - Centro de Matemática e Aplicações (FCT, UNL)
- CIMA - Centro de Investigação em Matemática e Aplicações (UE)
- PSE - Produtos e Serviços de Estatística
- INE - Instituto Nacional de Estatística
- FLAD - Fundação Luso-Americana para o Desenvolvimento
- Delta Cafés
- Associação de Promoção da Madeira

Part II

**Program**

# Program

## Sunday, June 5, 2016

**16:30 − 18:00 Welcome Drink at the Instituto do Vinho da Madeira**

## Monday, June 6, 2016

**9:00 − 9:20 Registration**

**Plenary Session**

9:20 − 9:30 *Opening*
9:30 − 10:10 J. Pan: *Joint mean-covariance modelling and its R package: jmcm*

**Contributed Session I**

10:20 − 10:40 P. Song: *Method of divide-and-combine in regularized regression for Big Data*
10:40 − 11:00 H. Drygas: *Adding observations in regression analysis*
11:00 − 11:20 K. Vaňkátová: *Clusterwise regression using mixtures of regression models*

**11:20 − 11:40 Coffee Break**

**Minisymposium -** Multivariate Linear Models

11:40 − 12:00 D. Klein: *Testing mean under compound symmetry covariance setup*
12:00 − 12:20 I. Žežula: *Comparison of estimators in a multivariate linear model with generalized uniform correlation structure*
12:20 − 12:40 M. Fonseca: *Estimation for the growth curve model with orthogonal covariance structure*

**12:40 − 14:10 Lunch**

**Contributed Session II**

14:10 − 14:30 A. Markiewicz: *Optimal circular neighbor designs under mixed interference models*
14:30 − 14:50 C. Francisco: *Hadamard matrices on error detection and correction: Useful links to BIBD*

**Minisymposium** - Estimation and Testing in Linear Models

$15:00 - 15:20$    J. T. Mexia: *Normal approximations to noncentral Wishart matrices*

$15:20 - 15:40$    J. S. Allison: *Goodness-of-fit tests for semiparametric transformation models*

$15:40 - 16:00$    L. Santana: *Goodness-of-fit tests for semiparametric and parametric hypotheses based on the probability weighted empirical characteristic function*

**$16:00 - 16:20$   Coffee break**

**Minisymposium** - Magic Squares, Prime Numbers and Postage Stamps

$16:20 - 16:40$    K. L. Chu: *Se-tenant philatelic Machin-definitive blocks with selected total face-values, with special emphasis on the Royal Mail "Stamps for Cooks" Prestige Booklet*

$16:40 - 17:00$    G. P. H. Styan: *A sensational $7 \times 7$ pandiagonal magic square with non-consecutive entries and "diamond-square arrangement" matrices for knight's tours in a pandiagonal magic carpet*

$17:00 - 17:20$    K. L. Chu: *Some comments on Margaret Kepner's "Magic Square 25 Study" (2010)*

$17:20 - 17:40$    G. P. H. Styan: *Some comments on Sophie Germain prime numbers and on two philatelic magic-carpet dinner-placemats for the IWMS-2016 Madeira Magic Minisymposium*

# Tuesday, June 7, 2016

**Plenary Session**

$9:30 - \ \ 10:10$    A. Kovačec: *The 123 theorem of probability theory and copositive matrices*

**Minisymposium** - Methods for Modelling Correlated and Complex Data

$10:20 - 10:40$    T. Nummi: *Analysis of multivariate growth curves with smoothing splines*

$10:40 - 11:00$    L. Shi: *Robust estimation in meta-regression analysis*

$11:00 - 11:20$    I. Ngaruye: *Small Area Estimation for multivariate repeated measures data*

**11:20 − 11:40  Coffee Break**

**Minisymposium** - Inequalities in Matrix Theory and Probability

11:40 − 12:00  K. Castillo: *On some inequalities for eigenvalues of a special class of unitary matrices*

12:00 − 12:20  M. Mattila: *Defining positive definite arithmetical functions and a partial order on the set of arithmetical functions by using matrix inequalities*

12:20 − 12:40  F. R. Rafaeli: *Inequalities of zeros of classical orthogonal polynomials via Jacobi matrices*

**12:40 − 14:10  Lunch**

**Plenary Session**

14:10 − 14:50  R. Kala: *A new look at combining information from stratum submodels*

**Minisymposium** - Estimation and Testing in Linear Models

15:00 − 15:20  R. Zmyślony: *Application of Jordan algebra for statistical inference in multivariate normal models*

15:20 − 15:40  K. Filipiak: *Estimation of parameters under a generalized growth curve model*

15:40 − 16:00  F. Carvalho: *Best quadratic unbiased estimators for variance components in models with orthogonal block structure*

**16:00 − 16:20  Coffee break**

**Contributed Session III**

16:20 − 16:40  C. Santos: *On the extension of a balanced mixed model*

16:40 − 17:00  A. C. Carapito: *Lyapunov-Metzler inequalities with solutions sharing a common Schur complement*

17:00 - **Poster Session**

V. Kopčová: *Unbiased estimator using hypergeometric function*

I. Sousa-Ferreira: *Hybrid model for recurrent event data*

## Wednesday, June 8, 2016

**Plenary Session**

   9:30 − 10:10  A. Agresti: *Some perspectives about generalized linear modeling*

**Contributed Session IV**

  10:20 − 10:40  S. Haslett: *Parameter inestimability in hierarchical log-linear models for sparse contingency tables*

**Special Session - part A**

Session devoted to the 75th birthday of Professor Jeffrey J. Hunter

  10:40 − 11:20  J. J. Hunter: *A fifty year journey with colleagues, generalized matrix inverses and applied probability*

    **11:20 − 11:40  Coffee break**

**Contributed Session V**

  11:40 − 12:00  E. Fišerová: *Conics and quadric surfaces fitting to correlated data*

  12:00 − 12:20  C. Dias: *Inference with **vec** type operators*

  12:20 − 12:40  C. Nunes: *Comparing for one-way fixed effects models the usual and the random sample sizes ANOVA*

    **12:40 − 14:00  Lunch**

**Special Session - part B**

Session devoted to the 75th birthday of Professor Jeffrey J. Hunter

  14:00 − 14:30  T. Dayar: *Representing probability vectors compactly*

  14:30 − 15:00  S. Kirkland: *Kemeny's constant and an analogue of Braess' paradox for Markov chains*

  15:00 − 15:30  G. Latouche: *The deviation matrix and quasi-birth-and-death processes*

  15:30 − 16:00  P. G. Taylor: *The Markov-modulated Erlang Loss System*

**16:00 - EXCURSION**

**19:00 - Conference Dinner**

## Thursday, June 9, 2016

**Plenary Session**

9:30 − 10:10  R. A. Bailey: *Association schemes in designed experiments*

**Contributed Session VI**

10:20 − 10:40  D. Kokol Bukovšek: *Seeking for a joint pmf given the sum of the marginal distributions*

10:40 − 11:00  C. Andrade: *Statistical analysis in climate research: aridity conditions in the Iberian Peninsula - a case study*

11:00 − 11:20  M. F. Teodoro: *Modeling the caregivers knowledge about pediatric hypertensions*

**11:20 − 11:40  Coffee break**

**11:40 − Special Session**

The Memorial Session of Ingram Olkin

**13:00 − 14:10  Lunch**

**Contributed Session VII**

14:10 − 14:30  A. Correia: *Confirmatory factor analysis for Entrepreneurial Framework Conditions*

14:30 − 14:50  R. Covas: *Variance-covariance matrix estimation in double multivariate data with symmetric monotone missing values*

14:50 − *Closing*