

Olomoucian Days of Applied Mathematics
ODAM²⁰₁₉



Faculty of Science, Palacký University Olomouc
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Scientific program
May 29 – May 31, 2019

Wednesday May 29 (10:00 – 17:10)

09:00 – 10:15 **Registration**

10:00 – 10:10 **Opening (room 5.007)**

10:15 – 11:45 **Invited lectures (room 5.007)**

Chair: Karel Hron

10:15 – 11:00 **Cristian Gatu**, Marc Hofmann, Erricos J. Kontoghiorghes
Computational strategies for subset regression model selection

11:00 – 11:45 **María Xosé Rodríguez-Álvarez**
Spatio-temporal adaptive penalised spline models

12:00 – 13:30 **Lunch**

13:30 – 15:10 **Compositional data analysis (room 5.007)**

Chair: Jaromír Antoch

13:30 – 13:50 **Dominika Mikšová**, Christopher Rieser, Peter Filzmoser
Identification of mineralization in geochemistry based on the spatial curvature of log-ratios

13:50 – 14:10 **Julie Rendlová**, Ondřej Vencálek, Karel Hron, Jan Václavík, David Friedecký, Tomáš Adam
Compositional analysis of untargeted metabolomic data using multiple Bayesian hypotheses testing

14:10 – 14:30 **Nikola Štefelová**, Javier Palarea-Albaladejo, Karel Hron
Weighted pivot coordinates in PLS regression with compositional covariates and its application to metabolomic data

14:30 – 14:50 **Karel Hron**, Mark Engle, Peter Filzmoser, Eva Fišerová
Bivariate analysis of compositional data using weighted symmetric pivot coordinates

14:50 – 15:10 **Kamila Fačevicová**, Ondřej Vencálek, Peter Filzmoser, Karel Hron
Compositional cubes and generalized linear models-similarities and differences

13:30 – 15:10 **Models, equations & computations 1 (room 5.006)**

Chair: Jitka Machalová

13:30 – 14:00 **Igor Bock**
A dynamic optimal control problem for an elastic plate in a contact with a rigid obstacle

14:00 – 14:20 **Michał Jureczka**
Application of nonsmooth optimization in solving contact mechanics problems

14:20 – 14:40 **Yunru Bai**, Leszek Gasiński, Nikolaos S. Papageorgiou
Positive solutions for nonlinear singular superlinear elliptic equations

14:40 – 15:00 Stanislaw Migorski, Mircea Sofonea, **Shengda Zeng**
History-dependent sweeping processes: well-posedness and applications

15:10 – 15:30 **Coffee break**

15:30 – 17:10	Probability and statistics (room 5.007)
	Chair: María Xosé Rodríguez-Álvarez
15:30 – 15:50	Talha Arslan <i>Scale-mixture extension of inverse Weibull distribution</i>
15:50 – 16:10	Lívia Leššová, Ján Mačutek <i>Oscillation of some iterated partial summations</i>
16:10 – 16:30	Josef Janák <i>Parameter estimation for stochastic partial differential equations of second order</i>
16:30 – 16:50	Petr Lachout <i>Stochastic optimization schema with timers</i>
16:50 – 17:10	Jaromír Antoch, Ondřej Vozár <i>Randomized response technique for estimating the population total</i>
15:30 – 17:10	Gao beam problems (room 5.006)
	Chair: Igor Bock
15:30 – 16:00	Jitka Machalová, Horymír Netuka <i>Beam in contact with deformable foundation: convex case</i>
16:00 – 16:30	Horymír Netuka, Jitka Machalová <i>Buckling analysis of nonlinear Gao beam</i>
16:30 – 16:50	Jana Burkotová, Jitka Machalová <i>Thickness optimization of piecewise constant Gao beam</i>
16:50 – 17:10	Jana Radová, Jitka Machalová <i>Solution of inverse problem for Gao beam using optimal control problem</i>
19:00	Get together (Moritz restaurant)

Thursday May 30 (9:00 – 15:45)

9:00 – 10:30 **Invited lectures (room 5.007)**

Chair: Tamás Rudas

9:00 – 9:45 **Mircea Sofonea, Yi-bin Xiao**

On the optimal control of variational-hemivariational inequalities

9:45 – 10:30 **Alessandra Menafoglio**

Functional data analysis for probability density functions: a Bayes space approach

10:30 – 10:50 **Coffee break**

10:50 – 11:50 **Functional data analysis (room 5.007)**

Chair: Alessandra Menafoglio

10:50 – 11:10 **Daniela Kuruczová**

Estimating mean and covariance function in principal component analysis through conditional expectation

11:10 – 11:30 **Veronika Římalová, Alessandra Menafoglio, Alessia Pini, Vilém Pechanec, Eva Fišerová**

A permutation approach to the analysis of spatio-temporal geochemical data in the presence of heteroscedasticity

11:30 – 11:50 **Renáta Talská, Alessandra Menafoglio, Karel Hron, Juan José Egozcue, Javier Palarea-Albaladejo**

Weighted Bayes spaces

10:50 – 12:00 **Models, equations & computations 2 (room 5.006)**

Chair: Mircea Sofonea

10:50 – 11:20 **Jaroslav Haslinger, Radek Kučera, Václav Šátek**

Analysis of discretized models of the Stokes flow with local Coulomb's slip boundary conditions

11:20 – 11:40 **Michal Černý, Miroslav Rada, Milan Hladík**

A Polynomial case of nonconvex quadratic optimization

11:40 – 12:00 **Stanislav Sysala, Jaroslav Haslinger, Sergej Repin**

Conic optimization in geotechnical stability analysis

12:00 – 13:30 **Lunch**

13:30 – 15:10	Regression methods (room 5.007)
	Chair: Cristian Gatu
13:30 – 13:50	Alena Pozdílková , Jaroslav Marek, Marie Nedvědová <i>Statistical view on the real estate market in the Czech Republic</i>
13:50 – 14:10	Eva Fišerová , Silvie Bělašková, Aneta Andrášiková <i>On higher order approximations in the Cox proportional hazards model</i>
14:10 – 14:30	Aneta Andrášiková , Eva Fišerová <i>Behaviour of higher order approximations in the Cox proportional hazards model</i>
14:30 – 14:50	Martina Chvosteková <i>Inferring causal interactions in bivariate time series</i>
14:50 – 15:10	Şükrü Acıtaş , Peter Filzmoser, Birdal Şenoğlu <i>A robust adaptive modified maximum likelihood estimator for the linear regression model</i>
15:10 – 15:30	Coffee break
15:15 – 15:45	Poster session (foyer, fifth floor)
	Jan Kolářek , Ondřej Pokora <i>Classification in analysis of auditory evoked potentials: functional PCA framework</i>
	Radim Navrátil , A.K.Md.Ehsanes Saleh <i>Rank theory approach to ridge, LASSO, preliminary test and Stein-type estimators</i>
	Ondřej Pokora , Jan Kolářek, David Vališ <i>System failure estimation based on field data and semi-parametric modeling</i>
	Iveta Selingerová <i>R and Matlab tools for kernel estimation and visualization of hazard function in survival analysis</i>
16:30 – 17:45	Excursion to the botanical garden
19:00	Conference dinner (Fontána restaurant)

Friday May 31 (9:00 – 12:30)

9:00 – 10:30 **Invited lectures (room 5.007)**

Chair: Ján Mačutek

9:00 – 9:45 **Tamás Rudas**, Anna Klimova

On generalizations of the log-linear model for multivariate categorical data

9:45 – 10:30 **Ines Wilms**, Stéphanie Aerts

Cellwise robust regularized discriminant analysis

10:30 – 10:50 **Coffee break**

10:50 – 12:30 **Mathematical and applied statistics (room 5.007)**

Chair: Eva Fišerová

10:50 – 11:10 **Zdeňka Geršlová**, Stanislav Katina, Igor Riečanský

Cross-correlations in ERP analysis of processes underlying mental rotation

11:10 – 11:30 **Vojtěch Šindlář**, Stanislav Katina

Comparism of different statistical models used in shape index calculation

11:30 – 11:50 **Zuzana Rošťáková**, Roman Rosipal

The parallel factor analysis and the Tucker model: a simulation study

11:50 – 12:10 **Ondřej Vencálek**, Daniel Hlubinka

Depth-based classification: modified k-nearest neighbour method

12:10 – 12:30 **Stanislav Nagy**

The halfspace depth characterization problem

10:50 – 12:20 **Models, equations & computations 3 (room 5.006)**

Chair: Jaroslav Haslinger

10:50 – 11:10 **Rostislav Vodák**, Richard Andrášik

Compressible nonlinearly viscous fluids: asymptotic analysis

11:10 – 11:30 **Jakub Kmec**, Tomáš Fürst, Rostislav Vodák, Miloslav Šír

Saturation overshoot in unsaturated porous media flow

11:30 – 11:50 **Pavel Ženčák**, Tomáš Fürst, Jiří Pecha

Practical aspects of the vehicle routing problem

11:50 – 12:20 **Tomáš Fürst**

Bayesian networks in the prediction and diagnostics of industrial assembly lines

12:30 **Closing (room 5.007)**

12:40 – 14:00 **Lunch**