RESEARCH TEAM PROFILE

RESEARCH AREA

Bioeconomic modelling, statistics, econometrics, biometrics, risk analysis

RESEARCH TEAM

Assoc. Prof. David Hampel, team leader, Mendel University in Brno, Czech Republic,
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Assoc. Prof. Václav Adamec, Mendel University in Brno, Czech Republic
Assoc. Prof. Jitka Janová, Mendel University in Brno, Czech Republic
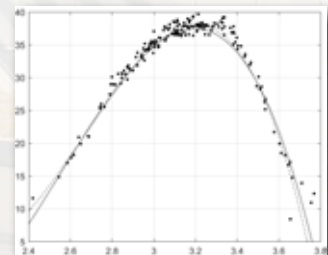Assoc. Prof. Luboš Střelec, Mendel University in Brno, Czech Republic

EXPERT PROFILE OF THE TEAM

Research team has wide experience with application of statistical methods and optimization techniques in various areas. Namely, agriculture and forest management models were employed based on real data. Expert decision support systems were created, validated and verified. Problems about planning and evaluating of experiments (field trials, laboratory, animal, and engineering) are solved routinely as well as variance component models and nonlinear models. Modelling of economic systems, including productivity, efficiency and sustainability topics was provided. Risk analyses oriented on enterprise performance and credit risks were carried out. Beside this, theoretical findings in experimental design and robust normality testing were achieved.

EXPERIENCE

Research projects

- The Czech Science Foundation, grant No. 16-07089S. Robust approach to testing for normality of error terms in econometric models, 2016–2018
- The Czech Science Foundation, grant No. 15-24867S. Small and medium size enterprises in global competition: Development of specific transfer pricing methodology reflecting their specificities, 2015–2017
- The Czech Science Foundation, grant No. 13-25897S. Nonholonomic constraints in optimal managing of dynamic economic systems in agriculture and natural resources, 2013–2015
- The Technology Agency of the Czech Republic, grant No. TD010128, Decision making support system for the plant varieties agricultural policy in the Czech Republic, 2012–2013
- The Technology Agency of the Czech Republic, grant No. TD020346, Decision making support system for the plant varieties agricultural policy in Czech Republic II, 2014–2015

Organized conferences

- 15th International Conference of Numerical Analysis and Applied Mathematics, session Statistics and Modelling; 2017, Thesaloniki, Greece
- XXI. Summer School of Biometrics; 2017, Karlov pod Pradědem, Czech Republic
- 14th International Conference of Numerical Analysis and Applied Mathematics, session Statistics and Modelling; 2016, Rhodos, Greece
- 12th International Conference of Numerical Analysis and Applied Mathematics, session Mathematical modelling of economic systems II; 2014, Rhodes, Greece
- XXIV. Problems of Decision Making under Uncertainties; 2014, Český Rudolec, Czech Republic
- XX. Summer School of Biometrics; 2014, Slavonice, Czech Republic
- 7th Workshop on Statistics, Mathematics and Computation, session Statistical methods in business and economics; 2013, Tomar, Portugal
- 11th International Conference of Numerical Analysis and Applied Mathematics, session Mathematical modelling of economic systems; 2013, Rhodes, Greece

International cooperation

- AKTION Czech Republic – Austria (JKU Linz)
- HORIZON – EURO1 – Societal Challenges – FairTax Consortium – 2015–2019 under the leadership of UMEA University

International bodies

- Institute for Systems and Technologies of Information Control and Communication
- Czech Operations Research Society
- Czech Academy of Agricultural Sciences
- Polish Biometrics Society

Selected publications in the field

- ĐORĐEVIĆ B., KRAJŇÁKOVÁ J., HAMPEL D., GÖMÖRY D., HAVEL L. Effects of cadmium and lead stress on somatic embryogenesis of coniferous species. Part I: Evaluation of the genotype-dependent response. Acta Physiologiae Plantarum. 2017, 39(6).
- KLEPÁČ V., HAMPEL D. Predicting financial distress of agriculture companies in EU. Agricultural Economics. 2017, 63(8), 347–355.
- RICHTER W.-D., STŘELEC L., AHMADINEZHAD H., STEHLÍK M. Geometric aspects of robust testing for normality and sphericity. Stochastic Analysis and Applications. 2017, 35(3), 511–532.
- MAREČEK V., MIKYŠKA A., HAMPEL D., ČEJKA P., NEUWIRTHOVÁ J., MALACHOVÁ A., CERKAL R. ABTS and DPPH methods as a tool for studying antioxidant capacity of spring barley and malt. Journal of Cereal Science. 2017, 73(January), 40–45.
- VANĚK T., HAMPEL D. Credit Risk and Regional Economic Disparities. Statistika. 2017, 97(3), 35-48.
- JORDANOVA P., FABIÁN Z., HERMANN P., STŘELEC L., RIVERA A., GIRARD S., TORRES S., STEHLÍK M. Weak properties and robustness of t-Hill estimators. Extremes. 2016, 19(4), 591–626.
- JANOVÁ J., HAMPEL D. Optimal managing of forest structure using data simulated optimal control. Central European Journal of Operations Research. 2016, 24(2), 297–307.
- JANOVÁ J., HAMPEL D. alfaDRA: A program for automatic elimination of variety self-proximities in alpha-design. Computers and Electronics in Agriculture. 2016, 122(March), 156–160.
- STEHLÍK M., STŘELEC L., THULIN M. On robust testing for normality in chemometrics. Chemometrics and Intelligent Laboratory Systems. 2014, 130(1), 98–108.
- JANOVÁ J. Crop plan optimization under risk on a farm level in the Czech Republic. Agricultural Economics. 2014, 60(3), 123–132.
- HŘIB J., ADAMEC V., SEDLÁČEK V., VOOKOVÁ B. Passive defense in somatic embryos of Abies alba from two cell lines tested with Phaeolus schweinitzii. Dendrobiology. 2013, 70(March 2013), 83–91.
- VOOKOVÁ B., HŘIB J., ADAMEC, V. Testing of Algerian fir zygotic and somatic embryos on defence reactions in vitro. Plant, Soil and Environment. 2012, 58(2), 84–90.
- SMÝKALOVÁ I., HAMPEL D., PAVELEK M. Determination of duplicates of accessions in a germplasm collection of flax/linseed by means of digital image analysis. Industrial Crops and Products. 2012, 36(1), 177–187.
- JANOVÁ, J. Crop Planning Optimization Model: the Validation and Verification Processes. Central European Journal of Operations Research. 2012, 20(3), 451–462.
- VIDMAR G., BLAGUS R., STŘELEC L., STEHLÍK, M. Business indicators of healthcare quality: Outlier detection in small samples. Applied Stochastic Models in Business and Industry. 2012, 28(3), 282–295.
- STEHLÍK M., FABIÁN Z., STŘELEC L. Small Sample Robust Testing for Normality against Pareto Tails. Communications in Statistics – Simulation and Computation. 2012, 41(7), 1167–1194.
- JANOVÁ, J. Applications of a constrained mechanics methodology in economics. European Journal of Physics. 2011, 32(6), 1443–1463.

Topics for excellent research

- H2020-ISIB-2015 Innovative, Sustainable and Inclusive Bioeconomy

Mendel University in Brno