Andrea Kraus

née Kvitkovičová

Personal Information

Born 1983, Prešov, Slovakia

Citizenship Slovakia

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Address Department of Mathematics and Statistics
Faculty of Science
Masaryk University
Kotlářská 2
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Czech Republic

Education

2009–2013 PhD in Mathematics
Swiss Federal Institute of Technology in Lausanne, Switzerland
Thesis title: Statistical Inference for Partially Observed Stochastic Epidemics
Supervisor: Prof. Victor M. Panaretos

2006–2008 M.Sc. in Biostatistics *With Greatest Distinction*
Hasselt University, Belgium (former LUC Diepenbeek)
Thesis title: Modelling the Seroprevalence Data
Supervisor: Prof. Niel Hens

2002–2008 Mgr. (M.Sc. equivalent) in Mathematical Statistics *Summa Cum Laude*
Charles University in Prague, Czech Republic
Thesis title: Statistical Inference for Random Processes
Supervisor: Prof. Daniel Hlubinka

Employment Experience

2015–present Postdoctoral Researcher
Masaryk University, Brno, Czech Republic
Department of Mathematics and Statistics
research in the field of mathematical and applied statistics
teaching assistant for advanced courses in statistics

2013–2015 Research Associate
Swiss Federal Institute of Technology in Lausanne, Switzerland
Mathematics Institute for Analysis and Applications
research in the field of statistical inference for stochastic population processes,
teaching assistant for introductory and advanced courses in statistics,
supervisor of student projects

2013–2014 Research Associate
University of Zurich, Switzerland
Epidemiology, Biostatistics and Prevention Institute, Department of Biostatistics
statistical consulting for medical research,
teaching assistant for advanced courses in biostatistics

2009–2013 Research Assistant
Swiss Federal Institute of Technology in Lausanne, Switzerland
Mathematics Institute for Analysis and Applications
development of methods for determining the spreading potential of a disease in the initial stages of an epidemic while the information is limited,
teaching assistant for introductory and advanced courses in statistics,
teaching assistant for introductory courses in mathematics and geometry

2007–2008 Statistician
Institute of Molecular Genetics of the Czech Academy of Sciences, Czech Republic
statistical consulting on the development of a prediction model for genetic data

Other Experience

2014–2015 Reduced working activities due to maternity leave

October 2013 Invited lecturer in charge of the initial day of a four-day course on Markov processes organised by Swiss Institute of Bioinformatics, Swizerland

2012–2014 Establishing and organising a seminar for statistics PhD students at the Swiss Federal Institute of Technology in Lausanne, Switzerland

2011–2012 Establishing and organising a seminar for PhD and master students in the Chair of Mathematical Statistics, Swiss Federal Institute of Technology in Lausanne, Switzerland

2007 Team Leader of a research group supported by a grant from the Grant Agency of Charles University in Prague, Czech Republic,
Research topic: Selected Biostatistical Problems

Awards and Honours

2013 Johann Heinrich Lambert Award for Young Statisticians,
Awarded by the Swiss Statistical Society

2011 Dean's award for excellent teaching results,
Faculty of Basic Sciences, Swiss Federal Institute of Technology in Lausanne, Switzerland

2008 Dean's Prize for the best master thesis,
Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic

2008 Quetelet Prize for a most outstanding M.Sc. in Biostatistics thesis,
Awarded by the Belgian Statistical Society

2006 The third best paper at the competition for university students ŠVOČ,
Category Probability Theory, Statistics, Econometrics and Financial Mathematics, Bratislava, Slovakia

2006 The best student's contribution at the meeting of Czech and Slovak statisticians Robust, Lhota nad Rohanovem, Czech Republic

Publications

Methodology

Kraus, A. and Panaretos, V. M. (2014). Frequentist estimation of an epidemic's spreading potential when observations are scarce. *Biometrika*, 101(1), 141-154

Kvitkovičová, A. and Panaretos, V. M. (2011). Asymptotic inference for partially observed branching processes. *Advances in Applied Probability*, 43(4), 1166-1190.

Hens, N., **Kvitkovičová, A.**, Aerts, M., Hlubinka, D., and Beutels, P. (2010). Modelling distortions in seroprevalence data using change-point fractional polynomials. *Statistical Modelling*, 10(2), 159-175.

Applications

Saguner, A. M., Ganahl, S., **Kraus, A.**, Baldinger, S. H., Akdis, D., Saguner, A. R., Wolber, T., Haegeli, L. M., Steffel, J., Krasniqi, N., Lüscher, T. F., Tanner, F. C., Brunckhorst, C. B., Duru, F. (2015). Electrocardiographic features of disease progression in arrhythmogenic right ventricular cardiomyopathy/dysplasia. *BMC Cardiovascular Disorders*, 15(1), 4.

Saguner, A. M., Ganahl, S., **Kraus, A.**, Baldinger, S. H., Medeiros-Domingo, A., Saguner, A. R., Müller-Burri, A. S., Haegeli, L. M., Wolber, T., Krasniqi, N., Tanner, F. C., Steffel, J., Brunckhorst, C. B., Duru, F. (2014). The clinical role of atrial arrhytmias in patients with arrhythmogenic right ventricular dysplasia. *Circulation Journal*, 78(12), 2854-2861.

Rüegger, C. M., **Kraus, A.**, Koller B., Natalucci, G., Latal, B., Waldesbühl, E., Fauchère, J. C., Held, L., Bucher, H. U. (2014). Randomized controlled trials in very preterm infants: does inclusion in the study result in any long-term benefit? *Neonatology*, 106(2), 114-119.

Saguner, A. M., Ganahl, S., Baldinger, S. H., **Kraus, A.**, Medeiros-Domingo, A., Nordbeck, S., Saguner, A. R., Müller-Burri, A. S., Haegeli, L. M., Wolber, T., Steffel, J., Krasniqi, N., Delacrétaz, E., Lüscher, T. F., Held, L., Brunckhorst, C. B., Duru, F. (2014). Usefulness of electrocardiographic parameters for risk prediction in arrhythmogenic right ventricular dysplasia. *American Journal of Cardiology*, 113(10), 1728-1734.

Divina, P., **Kvitkovičová, A.**, Buratti, E., and Vořechovský, I. (2009). Ab initio prediction of mutation-induced cryptic splice-site activation and exon skipping. *European Journal of Human Genetics*, 17(6), 759-765.

Academic Service

Referee for

Biometrika, Journal of Applied Probability, Statistics and Probability Letters, Statistica Sinica, Journal of Cardiovascular Disorders, Austin Journal of Anesthesia and Analgesia

Research Interests

General

Statistical modelling and inference for stochastic processes
Inference based on partial observation
Epidemic data modelling
Modelling infectious diseases
Biostatistics

Specific
Markov processes
Branching processes (discrete- and continuous-time, uni- and multi-variate)
Marked point processes
Space–time models
Quasi-likelihood estimation (martingale estimating equations)

Hitting time of a sloping line by the Wiener process
Hypotheses testing
Seroprevalence (current status) data

Other Skills

Software
Statistics and Mathematics: R, SAS, Mathematica
Other: LaTeX
Operating systems: MacOSX, Linux, Windows

Languages
English (fluent), French (good), German (moderate), Italian (basic)
Slovak (native), Czech (fluent)

Talks and Presentations

2015 Modelling and Estimating the Spread of an Epidemic from Little Initial Information
(invited talk)
ZüKoSt: Seminar on Applied Statistics, Swiss Federal Institute of Technology in Zurich, Switzerland

2013 Statistical Inference in Partially Observed Stochastic Epidemics
(invited talk by the winner of Johann Heinrich Lambert Award for Young Statisticians)
Swiss Statistics Meeting, Basel, Switzerland

2013 Introduction to Markov Processes
(lectures and exercises (invited) covering the initial day of a four-day course)
Markov Processes, course organised by Swiss Institute of Bioinformatics, given in Lausanne, Switzerland

2012 Statistical Inference in Epidemic Processes
(talk at a meeting of PhD students from Suisse romande)
PhD day, Ecole Polytechnique Fédérale de Lausanne, Switzerland

2011 Determining the Spreading Potential of a Disease from Partially Observed Counts of New Cases
(poster presentation)
Young Statisticians' Meeting, Dublin, Ireland

2011 Determining the Spreading Potential of a Disease from Partially Observed Counts of New Cases
(poster presentation)
Workshop on Inference for Epidemic-Related Risk, Warwick, United Kingdom

2009 Changepoint Fractional Polynomials in the Seroprevalence Data Modelling
(invited talk by the winner of Quetelet Prize)
Annual Meeting of the Belgian Statistical Society, Belgium

2009 Inference on Parameters of a Shifted and Rescaled Wiener Process
(invited seminar talk)
Seminar on Stochastic Evolution Equations, Czech Academy of Sciences, Prague, Czech Republic

2009 Modelling Infectious Diseases: Fractional Polynomials in Seroprevalence Data Modelling
(invited seminar talk)
International Society for Clinical Biostatistics in the Czech Republic, Prague, Czech Republic

2009 Shifted and Rescaled Wiener Process
(conference talk)
Stochastika 2009, Kohútka, Czech Republic

2008 Modelling Infectious Diseases
(invited seminar talk)
Seminar on Problems in Applied Statistics,
Charles University in Prague, Czech Republic

2008 Shifted and Rescaled Wiener Process
(conference talk)
Robust 2008, Račkova Dolina, Slovakia

2006 Wiener Process with a Drift
(conference talk; won the prize for the third best contribution)
Competition for university students ŠVOČ, Bratislava, Slovakia

2006 Wiener Process with a Drift
(conference talk; won the prize for the best student's contribution)
Robust 2006, Lhota nad Rohanovem, Czech Republic