Marie KRATZ

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RESEARCH INTERESTS

Probability Theory & Mathematical Statistics, Risk Modelling & Actuarial Science, Applied

EDUCATION

2013	Master in Actuarial Science: SAFIR-SAF, Claude Bernard University Lyon 1, France
2005	HDR, Université Paris 1 Panthéon-Sorbonne, France *On extreme behaviors of stochastic processes*
1993	Doctorate in Applied Mathematics, Université Pierre et Marie Curie (UPMC), France *Statistics of tails of distributions and Poisson approximation*

EMPLOYMENT

Full-time academic positions

2013 - Present	Fellow of the French Institute of Actuaries, Institut des Actuaires, France
2011 - Present	Full Professor, ESSEC Business School, France
2006 - 2011	Associate Professor, ESSEC Business School, France

Other affiliations and appointments

2013 - Present	Director of CREAR - Center of Research in Econo-finance and Actuarial Science on Risk, ESSEC Business School, France
2012 - 2027	Director of the ESSEC-ISUP actuarial track, ESSEC Business School, France
2012 - 2016	Scientific Coordinator of the European Project ‘RARE’ - Risk Analysis, Ruin and Extremes - FP7-PEOPLE-2012-IRSES - Marie Curie Actions, which aims to strengthen research partnerships through staff exchanges and networking activities between European research organizations and research organizations from other countries. (12 partners), ESSEC Business School, France
2011 - 2015	Director of the research program ESSEC - SWISS LIFE ”Consequences of the population ageing on the insurances loss. Impacts on the automobile prevention”, ESSEC Business School, France
2011 - 2014	Director of the Research program with SWISS LIFE on: Consequences of the population ageing on the insurances loss. Impacts on the automobile prevention, ESSEC Business School, France
2008 - 2012	Co-responsible of the ESSEC-ISUP actuarial track, ESSEC Business School, France

2017 - 2020	Part-time Visiting Professor, Lund University, Sweden
2013 - Present	Affiliated member to RiskLab, ETH Zurich, Switzerland
2012 - 2012	Internship at FINMA, Swiss Financial Market Supervisory Authority, Swiss Financial Market Supervisory Authority FINMA, Switzerland
2006 - Present	Member of GDR 3477 - Stochastic Geometry - see http://gdr-geostoch.math.cnrs.fr, CNRS - Centre national de la recherche scientifique,
2004 - 2009	Member of MAP5 (Applied Mathematics), UMR8145, Université Paris Descartes (Paris V), France
1999 - 2000	Delegation C.N.R.S. (SAMOS-MATISSE, UMR 8595, CNRS - Centre national de la recherche scientifique, France
1994 - 2006	Assistant, then associate professor, Université Paris Descartes (Paris V), France

GRANTS AND HONORS

Awards and Honors

2013	Fellow of the French Institute of Actuaries, Institut des Actuaires, France

Grants

2018	International chair labex MME-DII & ESSEC CREAR on Risk Analysis & Management, held by Dr. Michel Dacorogna, ESSEC CREAR, France
2017	Monash University, School of Mathematical Sciences & Center for Modelling of Stochastic Systems (CMSS), Monash University, Australia
2017	ETH Risk Center, ETH Zurich, Switzerland
2016	Institute for Mathematical Research (FIM), ETH Zurich, Switzerland
2016	Visiting scholar and Member of the advisory board of QRFE, Durham University, United Kingdom
2014	Tata Institute for Fundamental Research (TIFR, India), by a grant from the Indo-French Center for Applied Mathematics (IFCAM) for a research project between M. Kratz & S. Vadlamani, Tata Institute for Fundamental Research
2014	Labex MME-DII, Labex MME-DII, France
2012	FP7-PEOPLE-2012-IRSES - Marie Curie Actions, European Union, Belgium
2012	European FP7-RARE project
2010	Ceressec Research projects grants

PUBLICATIONS

Journal Articles

AMABA, T. and KRATZ, M. (2025). Regularization effects of time integration on Gaussian process functionals. *Stochastic Processes and their Applications*, 190, pp. 104761.

HAMBUCKERS, J., KRATZ, M. and USSEGLIO-CARLEVE, A. (2025). Efficient Estimation in Extreme Value Regression Models of Hedge Funds Tail risks. *Journal of Financial Econometrics*, 23(5), pp. nbaf018.

BRÄUTIGAM, M., DACOROGNA, M. and KRATZ, M. (2023). Pro-cyclicality beyond business cycle. *Mathematical Finance*, 33(2), pp. 308-341.

KRATZ, M. and PROKOPENKO, E. (2023). Multi-normex distributions for the sum of random vectors. Rates of convergence. *Extremes*, 26, pp. 509-544.

BRÄUTIGAM, M. and KRATZ, M. (2023). How do empirical estimators of popular risk measures impact pro-cyclicality? *Annals of Actuarial Science*, 17(3), pp. 547-579.

DACOROGNA, M. and KRATZ, M. (2023). Managing cyber risk, a science in the making. *Scandinavian Actuarial Journal*, 2023(10), pp. 1000-1021.

DACOROGNA, M., DEBBABI, N. and KRATZ, M. (2023). Building up cyber resilience by better grasping cyber risk via a new algorithm for modelling heavy-tailed data. *European Journal of Operational Research*, 311(2), pp. 708-729.

BANERJEE, A., CHEVILLON, G. and KRATZ, M. (2020). Probabilistic Forecasting of Bubbles and Flash Crashes. *Econometrics Journal*, 23(2).

DAS, S. and KRATZ, M. (2020). Risk Concentration Under Second Order Regular Variation. *Extremes*, 23, pp. 381-410.

CADENA, M., KRATZ, M. and OMEY, E. (2019). Characterization of a general class of tail probability distributions. *Statistics & Probability Letters*, 154, pp. 108553.

CADENA, M., KRATZ, M. and OMEY, E. (2019). On functions bounded by Karamata functions. *Journal of Mathematical Sciences*, 237(5), pp. 621-630.

KRATZ, M. (2019). L'approche statistique au service de l'humain : mieux comprendre les risques cyber pour une société plus résiliente. *Revue de la Gendarmerie Nationale*, (266), pp. 61-62.

KRATZ, M., LOK, Y.H. and MCNEIL, A.J. (2018). Multinomial VaR Backtests: A Simple Implicit Approach to Backtesting Expected Shortfall. *Journal of Banking & Finance*, 88(C), pp. 393-407.

DACOROGNA, M., ELBAHTOURI, L. and KRATZ, M. (2018). Validation of Aggregated Risks Models. *Annals of Actuarial Science*, 12(2), pp. 1-22.

KRATZ, M. and VADLAMANI, S. (2017). Central Limit Theorem for Lipschitz–Killing Curvatures of Excursion Sets of Gaussian Random Fields. *Journal of Theoretical Probability*, 31(3), pp. 1729-1758.

KRATZ, M. (2017). Discussion on the Paper: Elicitability and Backtesting: Perspectives for Banking Regulation. *Annals of Applied Statistics*, 11(4), pp. 1894-1900.

CADENA, M., KRATZ, M. and OMEY, E. (2017). On the Order of Functions at Infinity. *Journal of Mathematical Analysis and Applications*, 452(1), pp. 109-125.

DACOROGNA, M., ELBAHTOURI, L. and KRATZ, M. (2016). Explicit Diversification Benefit for Dependent Risks. *SCOR*.

CADENA, M. and KRATZ, M. (2016). New Results for Tails of Probability Distributions According to Their Asymptotic Decay. *Statistics & Probability Letters*, 109, pp. 178-183.

KRATZ, M. and NAGEL, W. (2016). On the Capacity Functional of Excursion Sets of Gaussian Random Fields on R^2. *Advances in Applied Probability*, 48(3), pp. 712-725.

EMMER, S., KRATZ, M. and TASCHE, D. (2015). What Is the Best Risk Measure in Practice? A Comparison of Standard Measures. *Journal of Risk*, 18(2), pp. 31-60.

GUILLOU, A., KRATZ, M. and LE STRAT, Y. (2014). An Extreme Value Theory Approach for the Early Detection of Time Clusters. A Simulation-Based Assessment and an Illustration to the Surveillance of Salmonella. *Statistics in Medicine*, 33(28), pp. 5015-5027.

KRATZ, M. (2014). Normex, a New Method for Evaluating the Distribution of Aggregated Heavy Tailed Risks. *Extremes*, 17(4), pp. 661-691.

BUSSE, M., DACAOROGNA, M. and KRATZ, M. (2014). The Impact of Systemic Risk on the Diversification Benefits of a Risk Portfolio. *Risks*, 2, pp. 260-276.

DAS, S. and KRATZ, M. (2012). Alarm System for Insurance Companies: A Strategy for Capital Allocation. *Insurance: Mathematics and Economics*, 51(1), pp. 53-65.

ESTRADE, A., IRIBARREN, I. and KRATZ, M. (2012). Chord-Length Distribution Functions and Rice Formulae. Application to Random Media. *Extremes*, 15(3), pp. 333-352.

CAPA SANTOS, H., KRATZ, M. and MOSQUERA MUNOZ, F. (2012). Modeling Macroeconomic Effects and Expert Judgements in Operational Risk: A Bayesian Approach. *Journal of Operational Risk*, 7(4), pp. 3-23.

DEMICHEL, Y., ESTRADE, A., KRATZ, M. and SAMARODNITSKY, S. (2011). How Fast Can the Chord-Length Distribution Decay? *Advances in Applied Probability*, 43(2), pp. 504-523.

KRATZ, M. and LEON, J.R. (2010). Level Curves Crossings and Applications for Gaussian Models. *Extremes*, 13(3), pp. 315-351.

KRATZ, M. (2006). Level Crossings and Other Level Functionals of Stationary Gaussian Processes. *Probability Surveys*, pp. 230-288.

KRATZ, M. and LEON, J. (2006). On the second moment of the number of crossings by a stationary Gaussian process. *Annals of Probability*, 34(4), pp. 1601-1607.

KRATZ, M. and PICCO, P. (2004). On a representation of Gibbs measure for R.E.M. *Annals of Applied Probability*, 14(2), pp. 651-677.

KRATZ, M. and LEON, J. (2001). Central Limit Theorems for Level Functionals of Stationary Gaussian Processes and Fields. *Journal of Theoretical Probability*, 14(3), pp. 639-672.

KRATZ, M. and LEON, J. (2000). Central limit theorems for the number of maxima and some estimator of the second spectral moment of a stationary Gaussian process. Applications in hydroscience. *Extremes*, 3(1), pp. 57-86.

KRATZ, M. and LEON, J. (1997). Hermite polynomial expansion for non-smooth functionals of stationary Gaussian processes: crossings and extremes. *Stochastic Processes and their Applications*, 66(2), pp. 237-252.

KRATZ, M. and ROOTZÉN, H. (1997). On the rate of convergence for extremes of mean square differentiable stationary normal processes. *Journal of Applied Probability*, 34(4), pp. 908-923.

KRATZ, M., RESNICK, S. and FEIGIN, P. (1996). Parameter estimation for moving averages with positive innovations. *Annals of Applied Probability*, 6, pp. 1157-1190.

KRATZ, M. and RESNICK, S. (1996). The Q-Q estimator and heavy tails. *Stochastic Models*, 12(4), pp. 699-724.

KRATZ, M. and HÜSLER, J. (1995). Rate of Poisson approximation of the number of exceedances of nonstationary normal sequences. *Stochastic Processes and their Applications*, 55, pp. 301-313.

KRATZ, M. (1993). Approximation Poissonnienne relative du processus empirique., 316, série I, pp. 1221-1224.

Book chapters

KRATZ, M. and DACOROGNA, M. (2020). Moving from Uncertainty to Risk: the Case of Cyber Risk. In: Hugo Loiseau, Daniel Ventre, Hartmut Aden eds. *Cybersecurity in Humanities and Social Sciences. A Research Methods Approach*. 1st ed. London & Hoboken: ISTE - WILEY, pp. 123-152.

KRATZ, M. (2019). Mathematics of Risk - Introduction to Extreme Value Theory. Applications to Risk Analysis & Management. In: *2017 MATRIX Annals - Mathematics of Risk*. 1st ed. Springer, pp. 591-637.

KRATZ, M. (2016). On the Estimation of the Distribution of Aggregated Heavy-Tailed Risks: Application to Risk Measures. In: *Extreme Events in Finance: Handbook of Extreme Value Theory and Its Applications*. 1st ed. Wiley, pp. 239-282.

Guest editor of a journal special issue

DACOROGNA, M. and KRATZ, M. (2022). Special Issue “Cyber Risk and Security”. *Risks*, 10.

CONSTANTINESCU, C., HASHORVA, E. and KRATZ, M. (2018). Annals of Actuarial Science. *Annals of Actuarial Science*, 12.

Conference proceedings

CADENA, M., KRATZ, M. and OMEY, E. (2017). On Functions Bounded by Karamata Functions. In: *Proceedings of XXXIV International Seminar on Stability Problems for Stochastic Models*. Journal of Mathematical Analysis and Applications.

KRATZ, M., LOK, Y. and NCNEIL, A. (2016). A Multinomial Test to Discriminate Between Models. In: *2016 ASTIN Colloquium*. Lisbon School of Economics and Management.

DEBBABI, N., KRATZ, M., MBOUP, M. and EL ASMI, S. (2015). Distribution hybride pour la modélisation de données à deux queues lourdes: Application sur les données neuronales. In: *25ème Édition du Colloque GRETSI*. École Normale Supérieure de Lyon.

DEBBABI, N., KRATZ, M., MBOUP, M. and EL ASMI, S. (2012). Combining Algebraic Approach with Extreme Value Theory for Spike Detection. In: *Proceedings of EUSIPCO 2012*.

KRATZ, M., ATENCIA, M. and JOYA, G. (2007). Fixed Points of the Abe Formulation of Stochastic Hopfield Networks. In: *ICANN - LNCS 4668*. Springer.

KRATZ, M. and HÜSLER, J. (1994). On the convergence of the number of exceedances of nonstationary normal sequences. In: *Extreme Value Theory and Applications*. Gaithersburg: Journal of Research of the National Institute of Standards and Technology, pp. 539-542.

Conferences

KRATZ, M., AKA, S. and NAVEAU, P. (2025). Discrete Multivariate Generalized Pareto Distribution for Drought Risk Assessment. In: 2025 Munich Risk and Insurance Days. Munich.

KRATZ, M. (2025). Multivariate extremes. In: 2025 Mathematical and Computational Foundations of Climate Modeling. Chennai.

KRATZ, M., HAMBUCKERS, J. and USSEGLIO-CARLEVE, A. (2025). Efficient estimation for EV regression models oftail risks. In: 56es Journées de Statistiques de la SFdS (2025 SFdS). Marseille.

KRATZ, M., SINGHA, S., VADLAMANI, S. and AKA, S. (2025). OT multivariate quantiles with applications in climate. In: 2025 UNIS Actuarial Conference. Salerno.

KRATZ, M., DACOROGNA, M. and DEBBABI, N. (2025). Cyber risk analysis & management. In: 2026 UNIS Actuarial Conference. Salerno.

SINGHA, S., KRATZ, M. and VADLAMANI, S. (2024). Developing OT (and related) graphical tools. Application in Risk Analysis & Management. In: 55e Journées de Statistique de la Société Française de Statistique (SFdS) 2024. Paris.

KRATZ, M. (2024). New methods for evaluating the distribution of heavy tailed data, based on (asymptotic) mean and extreme behaviours. In: 8th Ritsumeikan-Monash Symposium on Probability and Related Fields 2024. Kusatsu.

SINGHA, S., KRATZ, M. and VADLAMANI, S. (2024). Comparing Multivariate Distributions: A Novel Approach Using Optimal Transport-based Plots. In: 2024 Munich Risk and Insurance Days. Munich.

KRATZ, M. and BRAUTIGAM, M. (2023). Joint Asymptotics for the Sample Quantile and Measures of Dispersion for Functionals of Mixing Processes. In: 43rd Conference on Stochastic Processes and their Applications 2023. Lisbon.

KRATZ, M. and DACOROGNA, M. (2023). Cyber Risk Analysis: Overview and Focus on Extremes. In: 54èmes Journées de Statistique de la SFdS (JdS2023). Brussels.

KRATZ, M. and PROKOPENKO, E. (2023). Multi-Normex for Evaluating the Distribution of Aggregated Heavy Tailed Risks. In: 13th Conference on Extreme Value Analysis, Probabilistic and Statistical Models and their Applications 2023. Milan.

HAMBUCKERS, J., KRATZ, M. and USSEGLIO-CARLEVE, A. (2023). Efficient estimation for EV regression models of tail risks. In: 2023 Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023). Berlin.

KRATZ, M. and PROKOPENKO, E. (2022). Multi-Normex Approach based on Ordered Statistics for evaluating the Sum of Heavy-tailed Random Vectors. In: 14th International Conference on Ordered Statistical Data. Vietri.

KRATZ, M. and PROKOPENKO, E. (2022). Multi-Normex for evaluating the Distribution of Aggregated Heavy-tailed Risks. In: 53èmes Journéées de Statistique de la Société Française de Statistique (SFdS). Lyon.

DACOROGNA, M. and KRATZ, M. (2022). Consequences for risk management of the analysis of the GN database on cyber attacks. In: ASTIN Cyber Workshop – Capacity Crunch in the Cyber Market. London.

KRATZ, M. and CHAAR, A. (2021). Combining Machine Learning & Extreme Value Theory for modelling multimodal non homogeneous data. In: 63rd World Statistics Congress 2021, Invited Session: Extreme Value Statistics. Virtual.

KRATZ, M. and PROKOPENKO, P. (2021). Multi-Normex Distributions. In: 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021). London.

BRÄUTIGAM, M., KRATZ, M. and DACOROGNA, M. (2021). Pro--Cyclicality of traditional risk measurement. In: 8th European Congress of Mathematics.

KRATZ, M. (2021). Assurabilité des Risques Cyber. In: 1er Colloque International de l'Actuariat Francophone. Virtuel.

KRATZ, M. (2020). An algorithmic method for fitting multimodes heavy tailed distribution. In: 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020). London (virtual).

KRATZ, M. (2020). Pro-Cyclicality Beyond Business Cycles: The Case of Risk Measures. In: Singapore Actuarial Society (SAS)super week, SAS-ERM conference. Singapore (Virtual).

KRATZ, M. (2020). Pro-Cyclicality Beyond Business Cycles: The Case of Risk Measures. In: Actuarial Colloquium Paris 2020. Paris (virtual).

KRATZ, M. (2020). Round table on Key Issues and Challenges for Actuarial Science. Bringing together academics and practitioners. In: Actuarial Colloquium Paris 2020. Paris (virtual).

KRATZ, M. and AMABA, T. (2019). On the Regularity of Functionals for Stationary Gaussian Processes. In: 41st conference on Stochastic Processes and their Applications (SPA) 2019.

KRATZ, M., DEBBABI, N. and DACOROGNA, M. (2019). Data Analytics on Cyber Crimes Complaints Registered at C3N of Gendarmerie Nationale. In: 2019 Joint AFIR-ERM / ASTIN Symposium.

KRATZ, M. (2019). The impact of traditional risk measurement on the pro-cyclicality. In: Paris Seine Initiative Scientific Day. Neuville.

KRATZ, M. (2019). How does market price extremes of underlying shares in the options market? In: 14th International Conference on Computational and Financial Econometrics (CFE 2020). London.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2018). A Self-Calibrating Method for Heavy Tailed Data Modelling. Application in Neuroscience and Finance. In: 6th European Seminar on Computing (ESCO 2018).

KRATZ, M. (2018). Exploration statistique de données d'attaques cyber et approche méthodologique. In: Colloque international 'Méthodes de recherche en sciences humaines et sociales sur la cybersécurité.

KRATZ, M. (2018). Level Crossings and Applications. In: Workshop on 'Can Stochastic Geometry handle Dynamics of Risk Management?'.

KRATZ, M. (2018). Level Functionals for Gaussian Fields and Applications to Oceanography. In: 2018 Random Waves in Oxford.

BRÄUTIGAM, M. and KRATZ, M. (2018). On the Dependence between Quantile and Dispersion Estimators. Application to Quantitative Financial Risk Management. In: 7th Monash-Ritsumeikan Symposium on Probability and Related Fields 2018.

KRATZ, M. (2018). On the Regularity of Time Occupation Functionals for Gaussian Processes. In: Conference on ’Rough Paths Theory and Malliavin Calculus’, Rencontres Mathématiques de Rouen.

BANERJEE, A., CHEVILLON, G. and KRATZ, M. (2018). Probabilistic Forecasting of Bubbles and Flash Crashes. In: 2018 Asian Meeting of the Econometric Society.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2017). [Invited] A Self-Calibrating Method for Heavy Tailed Data Modeling. Applications in Finance and Insurance. In: CFA France Research Workshop.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2017). [Keynote] A Self-Calibrating Method for Heavy Tailed Data Modeling. Applications in Finance and Insurance. In: 2017 IRFRC Annual Conference.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2017). A Self-Calibrating Method for Heavy Tailed Data Modeling. Applications in Finance and Insurance. In: CMAstat 2017.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2017). A self-calibrating method for heavy-tailed modeling. In: 2017 ERCIM Working Group on Computational and Methodological Statistics (CMStatistics), Birkbeck University of London and King's College London.

GUILLOU, A., KRATZ, M. and LE STRAT, Y. (2017). An EVT Approach for the Early Detection of Time Clusters. Application in Health Surveillance. In: Probability: from East to West (PEW 2017).

KRATZ, M., LOK, Y. and MCNEIL, A. (2017). An Implicit Backtest for Expected Shortfall via a Simple Multinomial Approach. In: 2017 IASSL 3rd International Conference - Statistics for Good Governance.

KRATZ, M. (2017). EVT and its Application to finance and insurance. In: ETH Risk Center March 2017 Workshop.

KRATZ, M. (2017). Limit Theorems for Functionals of Excursion Sets of Gaussian Random Fields. In: 39th Conference on Stochastic Processes and their Applications.

KRATZ, M. (2017). Modeling and Backtesting Heavy Tailed Data. In: Durham Business School Workshop.

KRATZ, M. (2017). On Risk Aggregation. In: MATRIX workshop: "Mathematics of Risk".

KRATZ, M. (2017). Overview of Copulas for Actuaries in Management. In: SAS Forum Singapore 2017.

BRAÜTIGAM, M., DACOROGNA, M. and KRATZ, M. (2017). Procyclicality of Empirical Measurements of Risk in Financial Markets. In: 2017 Risk Measurement and Regulatory Issues in Business.

BRAÜTIGAM, M., DACOROGNA, M. and KRATZ, M. (2017). Procyclicality of Empirical Measurements of Risk in Financial Markets. In: 10th International Conference on Extreme Value Analysis.

KRATZ, M. (2016). An Implicit Backtest for ES via a Simple Multinomial Approach. In: 5th Iberian Congress of Actuaries.

KRATZ, M. and VADLAMANI, S. (2016). CLT for Lipschitz-Killing Curvatures. In: 6th Ritsumeikan-Monash Symposium on Probability and Relative Fields.

KRATZ, M. and VADLAMANI, S. (2016). CLT for Lipschitz-Killing Curvatures of Excursion Sets of Gaussian Fields. In: Monash Probability Conference in Honor of Robert Liptser’s 80th Birthday.

KRATZ, M. (2016). On New IFRS Rules: When Actuaires Meet Accountants. In: International Round Table.

KRATZ, M. and DAS, S. (2016). On Risk Concentration. In: 3rd ISNPS (International Society for Non-Parametric Statistics) Conference.

KRATZ, M. and CHOTARD, R. (2016). Risk Measure Estimates in Quiet and Turbulent Times: an Empirical Study. In: 10th International Conference on Computational and Financial Econometrics (CFE 2016).

KRATZ, M. (2016). Risk Models Validation [Keynote speaker]. In: 3rd ERM Conference-Singapore Actuarial Society (SAS).

KRATZ, M. (2016). Standard Risk Measures: A Statistical Debate. In: 2015 IMS-China International Conference on Statistics and Probability.

KRATZ, M. (2016). Validation of Risk Models. In: IFoA Asia conference.

KRATZ, M. (2015). Key Issues and Challenges that Researchers of Risk And Practitioners from Industries, Perceive as Significant over the Next Few Years. In: RTLC Research workshop.

KRATZ, M. and VADLAMANI, S. (2015). On Functionals of Excursion Sets of Gaussian Random Fields on R2. In: 5th Monash-Ritsumeikan Symposium.

KRATZ, M. and VADLAMANI, S. (2015). On Functionals of Excursion Sets of Gaussian Random Fields on R2. In: 9th international conference on Extreme Value Analysis (EVA 2015).

KRATZ, M. and DAS, S. (2015). On the Local Behavior of the Extreme Quantiles of the Sum of Heavy Tailed Distributed Random Variables. In: 60th ISI World Statistics Congress (WSC).

EMMER, S., KRATZ, M. and TASCHE, D. (2015). What is the Best Risk Measure in Practice ? In: 2015 IMS-China International Conference on Statistics and Probability.

EMMER, S., KRATZ, M. and TASCHE, D. (2015). What is the Best Risk Measure in Pratice? A Comparison of Standard Measures. In: 2nd International Conference of the Society for Economic Measurement.

DEBBABI, N. and KRATZ, M. (2014). A New Unsupervised Threshold Determination for Hybrid Models. In: 2014 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP).

KRATZ, M. (2014). Contributions to Risk Theory. In: 2014 Actuarial Teachers and Researchers Conference.

CHEVILLON, G., BANERJEE, A. and KRATZ, M. (2014). Detecting and Forecasting Large Deviations and Bubbles in a Near-Explosive Random Coefficient Model. In: 68th European Meeting of the Econometric Society.

BANERJEE, A., CHEVILLON, G. and KRATZ, M. (2014). Detecting and Forecasting Large Deviations and Bubbles in a Near-Explosive Random Co-efficient Model. In: Summer Institute 2014 of the National Bureau of Economic Research.

CHEVILLON, G., BANERJEE, A. and KRATZ, M. (2014). Forecasting Bubbles in a Near Explosive Random Coefficient Model. In: 25th EC2 Conference on "Advances in Forecasting".

KRATZ, M. and CADENA, M. (2014). On a Generalization of Some Karamata Results and Standard EVT Characterizations. In: 37th Conference on Stochastic Processes and their Applications.

KRATZ, M. (2014). On risk aggregation and diversification benefits. In: Conference on Extreme Events in Finance.

KRATZ, M. (2014). On the Generalization of Karamata and Standard EVT Characterizations. In: 7th International Workshop on Applied Probability.

CHEVILLON, G., BANERJEE, A. and KRATZ, M. (2014). Sentiment Driven Buoyancy. In: 8th International Conference on Computational and Financial Econometrics (CFE 2014).

KRATZ, M. (2014). Setting the risk appetite in the presence of systemic risk. In: Enterprise Risk Management (ERM) conference.

KRATZ, M. (2013). A Shifted CLT: An Alternative Solution to Correctly Estimate in a Gaussian Realm the Var In Presence Of Heavy Tails. In: Workshop EVT - Extremes in Vimeiro 2013.

KRATZ, M., BUSSE, M. and DACOROGNA, M. (2013). Does Risk Diversification Always Work? The Answer Through Simple Modelling. In: 13th Annual Conference of the European Network for Business and Industrial Statistics (ENBIS-13).

KRATZ, M. and NAGEL, W. (2013). On the Capacity Functional of Excursion Sets of Gaussian Random Fields on R^2. In: EVA 2013.

KRATZ, M. (2013). There is a VaR Beyond Usual Approximations. In: Workshop on Heavy-tailed Distributions and Extreme Value Theory.

BANERJEE, A., CHEVILLON, G. and KRATZ, M. (2012). Detecting and Predicting Rational Asset Price Bubbles in a Near Explosive Random Coefficient Autoregressive Model. In: SMU-ESSEC Symposium on Empirical Finance and Financial Econometrics 2012.

ELBAHTOURI, L., DACOROGNA, M. and KRATZ, M. (2012). Explicit Diversification Benefit Formulas for Dependent Risks. In: 1st European Actuarial Journal Conference.

KRATZ, M. and NAGEL, W. (2012). The Tail Distributions of Functionals of Random Excursion Sets. In: Sixth International Workshop on Applied Probability (IWAP 2012).

KRATZ, M. and NAGEL, W. (2012). The Tail Distributions of Functionals of Random Excursion Sets (co-author NAGEL W.). In: Stereology, Spatial Statistics and Stochastic Geometry 7th International Conference (S4G 2012).

KRATZ, M. (2009). A Brief Review on EVT Basics and Operational Risk Measures. In: European Workshop on Risk Analysis and EVT.

KRATZ, M. (2009). Franchissement de courbe de niveau, formules de Rice et extremum. In: MAS.

KRATZ, M. (2009). On the decay of Chord-lengths. In: Stochastic Processes and their Applications.

KRATZ, M. and SHUBHABRATA, D. (2008). On efficiency and Alarm System in Reinsurance Contracts. In: 7th World Congress in Probability and Statistics.

KRATZ, M., ESTRADE, A. and IRIBARREN, I. (2007). Chord-distribution Functions and Rice Formulae. Application to Random Media.

KRATZ, M., ATENCIA, M. and JOYA, G. (2007). Fixed points of the Abe formulation of Stochastic Hopfield Networks. In: 17th ICANN. Porto.

KRATZ, M. and LEON, J. (2006). Curve crossings and specular points, d'après Longuet-Higgins. In: 31th Conference on Stochastic Processes and their Applications. Paris.

KRATZ, M., ESTRADE, A. and IRIBARREN, I. (2006). Funciones de distribucion de cuerdas en medios porosos. In: Rencontres France-Espagne-Venezuela de probabilité et statistique mathématique. Choroni.

KRATZ, M. (2005). On level functionals of Gaussian fields. In: 2nd Intern. Conf. of Applied Mathematics. Plovdiv.

KRATZ, M. (2004). Estadisticas de valores extremos. In: IX Encuentro de Matem\'atica y sus Aplicaciones y IV Seminario de Estad\'istica Aplicada. Quito.

Invited speaker

KRATZ, M. (2024). Confronting emerging risks with flexible general models: a focus on cyber risk. In: 6th edition of the European Actuarial Journal Conference (EAJC). Lisbon.

KRATZ, M. (2023). Cyber Risk Analysis, with a Focus on Extremes. In: Workshop on Insurance and Financial Mathematics: Cyber Risk and Insurance. Hannover.

KRATZ, M. (2023). Efficient estimation for EV regression models of tail risks. In: Les 30 ans du LMM - Journées ‘Risque’. Le Mans.

KRATZ, M. (2019). Data Analytics on Cyber Crimes Complaints Registered at C3N of PJGN. In: Annual SCOR Group Actuarial Conference.

KRATZ, M. (2019). Evaluating the cyber risk: the researcher point of view. In: Pôle Analyse : Peut-on évaluer les risques Cyber?, PJGN.

KRATZ, M. (2019). On the regularity of functionals for stationary Gaussian processes [invited session]. In: 41th SPA (Stochastic Processes and its Applications) conference, Northwestern Univ.

KRATZ, M. (2019). Data Analytics on Cyber Crimes Complaints Registered at C3N of PJGN. In: ASTIN-AFIR conference. Warsaw.

KRATZ, M. (2019). Pro-Cyclicality of Traditional Risk Measurements: Quantifying and Highlighting Factors at its Source. In: Zurich-Hannover workshop on Insurance and Financial Mathematics. Hannover.

Prefaces of a journal

DACOROGNA, M. and KRATZ, M. (2022). Research in Cyber Risk, an Important Step for Building Resilience. *MDPI*, 10(112).

CONSTANTINESCU, C., HASHORVA, E. and KRATZ, M. (2018). Editorial: Foreword by the Guest Editors of the RARE special issue. *Annals of Actuarial Science*, 12, pp. 209-210.

Working Papers

AKA, S., KRATZ, M. and NAVEAU, P. (2026). *Likelihood-Free Inference for Multivariate Generalized Pareto Models*. WP 2603, ESSEC Business School.

AKA, S., KRATZ, M. and NAVEAU, P. (2026). *Benchmark of Likelihood-Free Inference Methods based on Neural and Optimal Transport Approaches*. hal-05639283, ESSEC Business School.

AKA, S., KRATZ, M. and NAVEAU, P. (2025). *Multivariate discrete Generalized Pareto Distributions: Theory, simulation, and applications to dry spells*. WP 2508, ESSEC Business School.

SINGHA, S., KRATZ, M. and VADLAMANI, S. (2024). *Comparing Multivariate Distributions: A Novel Approach Using Optimal Transport-based Plots*. WP 2402, arXiv.

KRATZ, M. and KHORAMI CHOKAMI, A. (2023). *On the relation between extremal dependence and concomitants*. WP 2301, ESSEC Business School Research Center.

KRATZ, M. and DACOROGNA, M. (2023). *Managing Cyber Risk, a Science in the Making*. WP 2302, ESSEC Business School Research Center.

HAMBUCKERS, J., KRATZ, M. and USSEGLIO-CARLÈVE, A. (2023). *Efficient Estimation in Extreme Value Regression Models of Hedge Fund Tail Risks*. WP 2305, ESSEC Business School.

SINGHA, S., KRATZ, M. and VADLAMANI, S. (2023). *From geometric quantiles to halfspace depths: A geometric approach for extremal behaviour*. WP 2307, ESSEC Business School.

KRATZ, M. (2022). *Building up Cyber Resilience by Better Grasping Cyber Risk Via a New Algorithm for Modelling Heavy-Tailed Data*. WP 2210, ESSEC Business School.

KRATZ, M. and PROKOPENKO, E. (2021). *Multi-Normex Distributions for the Sum of Random Vectors. Rates of Convergence*. 2102, ESSEC Business School.

BRÄUTIGAM, M. and KRATZ, M. (2019). *Bivariate FCLT For The Sample Quantile And Measures Of Dispersion For Augmented Garch(p, q) Processes*. WP1909, ESSEC Business School.

BRÄUTIGAM, M. and KRATZ, M. (2018). *On The Dependence Between Quantiles And Dispersion Estimators*. ESSEC Business School.

BRÄUTIGAM, M., DACOROGNA, M. and KRATZ, M. (2018). *Predicting Risk with Risk Measures: An Empirical Study*. ESSEC Business School.

DAS, S. and KRATZ, M. (2017). *Diversification Benefits Under Multivariate Second Order Regular Variation*. ESSEC Business School.

CADENA, M., KRATZ, M. and OMEY, E. (2017). *New Results on the Order of Functions at Infinity*. ESSEC Business School.

DEBBABI, N., KRATZ, M. and MBOUP, M. (2016). *A Self-Calibrating Method for Heavy Tailed Data Modeling. Application in Neuroscience and Nance*. ESSEC Business School.

KRATZ, M. and VADLAMANI, S. (2016). *CLT for Lipschitz-Killing Curvatures of Excursion Sets of Gaussian Random Fields*. ESSEC Business School.

KRATZ, M., LOK, Y.H. and MCNEIL, A.J. (2016). *Multinomial VaR Backtests: A Simple Implicit Approach to Backtesting Expected Shortfall*. ESSEC Business School.

CHOTARD, R., DACOROGNA, M. and KRATZ, M. (2016). *Risk Measure Estimates in Quiet and Turbulent Times: An Empirical Study*. ESSEC Business School.

DACOROGNA, M., FRANCISCO MIGUELEZ, J.J. and KRATZ, M. (2016). *Risk Neutral Versus Real-World Distribution of Publicly Listed Bank Corporations*. ESSEC Business School.

DACOROGNA, M., ELBAHTOURI, L. and KRATZ, M. (2015). *Explicit Diversification Benefit for Dependent Risks*. ESSEC Business School.

DACOROGNA, M. and KRATZ, M. (2015). *Living in a Stochastic World and Managing Complex Risks*. ESSEC Business School.

KRATZ, M. and CADENA, M. (2014). *An Extension of the Class of Regularly Varying Functions*. ESSEC Business School.

KRATZ, M. and NAGEL, W. (2014). *On the Capacity Functional of Excursion Sets of Gaussian Random Fields on R^2*. ESSEC Business School.

BANERJEE, A., CHEVILLON, G. and KRATZ, M. (2013). *Detecting and Forecasting Large Deviations and Bubbles in a Near-Explosive Random Coefficient Model*. ESSEC Business School.

BUSSE, M., DACOROGNA, M. and KRATZ, M. (2013). *The Impact of Systemic Risk on the Diversification Benefits of a Risk Portfolio*. ESSEC Business School.

KRATZ, M. (2013). *There is a VaR Beyond Usual Approximations*. ESSEC Business School.

EMMER, S., KRATZ, M. and TASCHE, D. (2013). *What Is the Best Risk Measure in Practice? A Comparison of Standard Measures*. ESSEC Business School.

CAPA SANTOS, H., KRATZ, M. and MOSQUERA MUÑOZ, F.V. (2012). *Modelling Macroeconomic Effects and Expert Judgements in Operational Risk: A Bayesian Approach*. ESSEC Business School.

KRATZ, M. (2005). *Some contributions in probability and statistics of extremes*.

KRATZ, M. (2000). *Chaos expansions and level crossings*.

KRATZ, M. (1993). *Statistics of tails of distributions and Poisson approximation*.

Press

KRATZ, M. (2020). Understanding Procyclicality. *ESSEC Knowledge*.

KRATZ, M. (2019). Adapting to the new risk landscape: is cyber insurable? *ESSEC Knowledge*.

KRATZ, M. (2019). S'adapter au nouvel environnement des risques : peut-on assurer le risque cyber ? *Reflets ESSEC Magazine*.

KRATZ, M. (2017). The Future of Insurance with the Advent of Artificial Intelligence. *ESSEC Knowledge*.

DACOROGNA, M., KRATZ, M. and LECOMTE, P. (2016). Changing Times Require New Tools for Risk Management. *Asia Insurance Review*, pp. 98-99.

KRATZ, M. (2016). L'actuariat, des activités et compétences en pleine évolution. *Grandes Ecoles Magazine*.

KRATZ, M. (2015). Managing Risk Is about Raising Society's Resilience. *Business Times Singapore*.

OTHER RESEARCH ACTIVITIES

Editorial Board Membership

2019 - 2023 REVSTAT Statistical Journal

Organisation of a conference

2021 ARLEStat organized session, CFE--CMS conference 2021, United Kingdom

2021 Colloque Actuariat SCOR & IA2021, Institut des Actuaires, France

2021 Assurabilité des risques cyber, 1er Colloque International de l'Actuariat Francophone

2021 Invited session - Stochastic Analysis in Mathematical Finance and Insurance, IMS - Bernoulli Society

Since 2021 ARLES series of seminars, ARLES partners

Since 2020 International round table on Key Issues and Challenges for Actuarial Science - Bringing Together Academics and Practitioners, International Actuarial Colloquium (Virtual),

2019 Can Stochastic Geometry handle Dynamics of Risk Management?, ESSEC Business School, France

2018 'Cyber risks – Threats and Opportunities for the Asia Pacific Insurance Industry', 4th SAS ERM - ESSEC CREAR Conference, Singapore

2018 Can Stochastic Geometry handle Dynamics of Risk Management?, Lund University, Sweden

2016 'Lois Scientifiques et Modèles Mathématiques: de la physique à l'actuariat', Colloquium SCOR-IA, Paris

2016 'Financial risk: Black Swan or Opportunities?', ESSEC Business School, France

2016 Concluding International 'RARE' Conference on Risk Analysis, Ruin theory, Extremes, La Baule (CREAR, with the support of Swiss Re, Institut des Actuaires, SCOR science foundation, Bank of England, AMIES-IA, IFoA, BFA-SFdS), France

2015 International Round Table on New IFRS rules : Actuaries meet Accountants, Paris La Défense (CREAR, with the support of Labex MME-DII, Institut des Actuaires &

BFA-SFdS)

2014 Mini-workshop "Small data " (CREAR & BFA-SFdS), 13ème Congrès des Actuaires, Paris

2014 International Actuarial Colloquium (Virtual), co-organizer (member of the Scientific Committee)

2012 ESSEC CREAR - SWISS LIFE conference: 'Risk, Insurance and Longevity', ESSEC La Défense

2010 BFA - SFdS & ESSEC WG Risk: 'Financial Regulation' , Paris, France

Since 2009 Organizer of the Working-Group-on-Risk (CREAR series of fortnightly seminars), ESSEC Business School, France

2009 European workshop on EVT & Finance - Paris La défense, France

2009 Workshop on Models and Images for Porous Media - Paris, France

2006 - 2012 Co-organizer of the IDS department research seminar, ESSEC Business School, France

Affiliations

2006 - 2009 Member of the ANR MiPomodim and the Working Group on Random Porous Media Modelling (Paris Descartes)

2005 - 2011 Responsible in Paris Descartes of the GREFI-MEFI (European Research Group Franco Italian - Matematica Fisica)

PhD Supervision

2024 S. SINGHA (TIFR–CAM), Thesis co-director, First Placement: Postdoc at Telecom Paris, IP Paris

2024 D. DOROBANTU (Claude Bernard University Lyon 1), Thesis referee

2023 G. ZELLER (Technical University of Munich (TUM)), Thesis referee

2023 M. ABAACH (Université Paris Cité), Thesis referee

2022 G. BURITICA (Sorbonne Université), Thesis jury president

2022 C. SPYCHALA (Université de Franche-Comté), Thesis referee

2020 M. Bräutigam (ESSEC Business School), Thesis director

2019 A. LY (Université Paris-Est Marne-la-Vallée (UPEM)), Thesis jury member

2017 M. BENTLEY (Monash University), Thesis referee

2016 M. Cadena (ESSEC Business School), Thesis director

2015 N. Debbabi (URCA), Thesis co-director

2015 A. CUBEROS (Claude Bernard University Lyon 1), Thesis referee

2014	M. E. GARCÍA GARALUZ (Universidad de Malaga), Thesis jury member
2013	N. CHEVANIER (University of Rouen), Thesis jury president
2008	G. TOULEMONDE (Université Pierre et Marie Curie (UPMC)), Thesis referee
2004	M. ATENCIA (Universidad de Malaga), Thesis referee
	S. AKA (LSCE, CEA-CNRS), Thesis co-director

Other research activities

2006 - 2009	Member of MIPOMODIM (Project ANR blanc - NT05-1_42030)
Since 2015	Member of the Advisory Board of QRFE, Durham Business School, United Kingdom
Since 2014	Member of the Scientific Committee of the IRFRC Conference, NTU Singapore
2014 - 2016	Member of the ANR Ameriska on the Analysis of Multivariate Extremes and RISKs Assessment
Since 2013	Member of the Scientific Committee of ISUP-UPMC

TEACHING EXPERIENCE

2019	Cyber risk, ETH Risk Center, Suisse
2017	CFA France Research Workshop, 'A self-Calibrating Method for Heavy Tailed Data
2017	Singapore Actuarial Society Forum on 'Overview of Copulas for Actuaries in
2017	1/2 day workshop on 'EVT and its Application to finance and insurance',, ETH Risk
2017	Mini-workshop on 'Modeling and Backtesting Heavy Tailed Data', Durham
2016	'An implicit backtest for Expected Shortfall via a simple multinomial approach', Bank
2016	'A self-Calibrating Method for Heavy Tailed Data Modeling', Swiss Re, Suisse
2016	Two days executive seminar on Quantitative Risk Management, National Institute of
2013	'An Introduction to Quantitative Risk Management' - course given at the Summer

PROFESSIONAL ACTIVITIES

Other professional activities

2022 - Present	ENISA (European Union Agency for Cybersecurity)
2021 - Present	Fondation 'La Science Statistique', Fondation "La Science Statistique", France
2010 - Present	Member of the Banque, Finance, Assurance - BFA group - SFdS (President until 2017), Société Française de Statistique (SFdS), France
2007 - Present	SFdS - Société Française de Statistique
1997 - Present	Affiliated member of the Bernoulli society, IMS - Bernoulli Society

1994 - Present	BERNOULLI SOCIETY (for Mathematical Statistics and Probability- ISI section), International Statistical Institute, Netherlands
2017	Experts forum: Singapore Actuarial Society forum, 'Overview of Copulas for Actuaries in Management', Singapore
2016 - Present	Research experts forum (invited panelist), fringe event to the IFoA Asia conference, Kuala Lumpur, Malaysia
2015	Round table of senior experts to discuss key issues and challenges that researchers of risk and practitioners from industries, perceive as significant over the next few years (Invited panelist by the IFoA), London, United Kingdom
2014	Experts Forum on Risk Measures and Regulation in Insurance, Swiss Re Learning Center (by invitation), Zurich, Switzerland
2012	Workshop on Statistical Applications to Climate Extremes, Zurich Development Center (by invitation), Zurich, Switzerland

SERVICE

2019 - 2021	Teaching Committee, ESSEC Business School, France
2016 - 2021	Statistics faculty recruitment
2008 - 2014	Statistics faculty recruitment, ESSEC Business School, France