Lyudmila Grigoryeva

CONTACT INFORMATION	Assistant Professor Department of Mathematics and Statistics Universität Konstanz Graduate School of Decision Sciences Box 146 D-78457 Konstanz, Germany lyudmila.grigoryeva@uni-konstanz.de Webpage: http://www.grigoryeva.info Room: E210 Phone: ++49 7531 88 4333

EDUCATION

Taras Schevchenko National University of Kyiv, Kyiv, Ukraine

Ph.D. (technical sciences), **July 8th, 2009**
Mathematical Modeling and Computational Methods

- Ph.D. Thesis: Computer Technologies in the Modeling of Free Magnets Dynamics
- Advisors: Professor Serhiy I. Lyashko, Professor Vasyl' V. Kozoriz

Post-Graduate, **October 2008**
Faculty of Cybernetics, Chair of Computational Mathematics

- Advisor: Professor Serhiy I. Lyashko
- Speciality: Mathematical Modeling and Computational Methods

Transcarpathian State University (Uzhgorod National University), Uzhgorod, Ukraine

M.S., **July 2005**
Information Control Systems and Technologies, Faculty of Information Science

- *Magna cum Laude*, With Honors in Information Control Systems and Technologies
- Thesis Topic: Multidimensional Interpolation Methods and Implementation
- Advisor: Professor Fedir H. Vaschuk
- Area of Study: Computer Sciences

B.S., **July 2004**
Computer Science, Faculty of Information Science

- *Magna cum Laude*, With Honors in Information Control Systems and Technologies
- Major specialization in Computer and Information Systems

AWARDS	**Schlumberger Foundation Faculty for the Future Fellowship Award** **2012–2013** **Schlumberger Foundation Faculty for the Future Fellowship Award** **2011–2012** **Rector's Distinguished University Fellowship** **2004–2005** **Dean's Distinguished University Fellowship** **2002–2003** **Golden Medal High School Award for excellence** **2000** **Annual School Award to the best student of the class** **(10 years in a row in 3 different schools)** **1990–2000**

PERSONAL	Born 30 April, 1984 in Mukachevo, Ukraine. Citizen of Ukraine. Married, no children. Native Russian and Ukrainian speaker. Fluent in English, French.

PROFESSIONAL EXPERIENCE

Universität Konstanz, Konstanz, Germany

Assistant Professor **October 2015 to present**

Department of Mathematics and Statistics
Graduate School of Decision Sciences

Université de Franche-Comté, Besançon, France

Postdoctoral position **October 2013 to September 2015**

Research contract with the Région de Franche-Comté
Project "Réservoir Computing: développement en traitement de signaux biomédicaux et en prédiction",
Convention Région No. 2013C-5493

UFR des Sciences et Techniques
Laboratoire de Mathématiques de Besançon
Supervisor Juan-Pablo Ortega - Chargé de Recherches, CNRS

Université de Franche-Comté, Besançon, France

Postdoctoral position
(funded by the Schlumberger Foundation)   **October 2011 to September 2013**

UFR des Sciences et Techniques
Laboratoire de Mathématiques de Besançon
Supervisor Juan-Pablo Ortega - Chargé de Recherches, CNRS

Masaryk University, Brno, Czech Republic

Postdoctoral position (3-months program)   **October 2010 to December 2010**

Faculty of Science
Department of Mathematics and Statistics
Research group of Prof. Bedrich Puza

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Junior Research Fellow   **November 2009 to December 2013**

Institute of High Technologies
Scientific and Research Department
Division of Applied Development and Implementation
Research Laboratory "Physics and Technology of Movable Systems"

Research Engineer   **June 2008 to July 2008**

Scientific and Research Department
Faculty of Radiophysics
Research Laboratory of Cryogenic Complex

Kyiv National Economics University (Vadim Getman Kyiv National Economics University), Kyiv, Ukraine

Assistant   **October 2009 to August 2010**

Department: Faculty of Information Systems and Technologies
Chair: Higher Mathematics

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Assistant   **September 2006 to July 2007**

Department: Faculty of Cybernetics
Chair: Computational Mathematics

GRANTS
SCIENTIFIC
PROGRAMS

[1] Research grant "Quadratic Hedging schemes: from GARCH to diffusions", Institut de la finance structurée et des instruments dérivés de Montréal, Canada, July 2015–July 2016.

[2] Program of the International Laboratory of Quantitative Finance, National Research University Higher School of Economics, Moscow, Russia, March 2014 – November 2014.

[3] Focus Program on Geometry, Mechanics and Dynamics, the Legacy of Jerry Marsden. The Fields Institute, Toronto, Canada, July 2012.

[4] State budget research project of application development of Taras Shevchenko National University of Kyiv No. 08BP052-02 "Development of Magnetic Levitation for Transportation with Zero Electric Losses and Non-contact Vehicle Suspension Based on the Magnetic Potential Well Phenomenon" (state registration number: 0109U002142).

[5] International Ukraine-Slovakia scientific-research project "Modelling and Analysis of Non-traditional Dynamic Systems in Transport" (under the international treaty No.M/34-2008 of March 27th, 2008).

[6] State budget research theme of Kyiv State Maritime Academy "Development of Retarding-Accelerating Transportation Devices Based on Novel Superconductive Maglev Technologies" (state registration number: 0107U0022798, October 27th, 2006).

PREPRINTS
[1] Grigoryeva, L. and Ortega, J.-P. 2016. Ridge regression with homoscedastic residuals: generalization error with estimated parameters.

[2] Grigoryeva, L., Ortega, J.-P., Peresetsky, A. 2015. Volatility forecasting using global stochastic financial trends extracted from non-synchronous data. (Under revision in *Econometrics and Statistics*)

[3] Grigoryeva, L., Henriques, J., and Ortega, J.-P. 2015. Quantitative evaluation of the performance of discrete-time reservoir computers in the forecasting, filtering, and reconstruction of stochastic stationary signals.

[4] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2015. Reduction and estimation of non-scalar multivariate volatility models.

PUBLICATIONS
[1] Grigoryeva, L., Henriques, J., Larger, L., Ortega, J.-P. 2016. Nonlinear memory capacity of parallel time-delay reservoir computers in the processing of multidimensional signals. To appear in *Neural Computation*.

[2] Grigoryeva, L., Henriques, J., Ortega, J.-P. 2016. Reservoir computing: information processing of stationary signals. *IEEE International Conference on Computational Science and Engineering*. doi: 10.1109/CSE-EUC-DCABES.2016.231. Paper presented with the Best Paper Award.

[3] Grigoryeva, L., Henriques, J., Larger, L., Ortega, J.-P. 2016. Time-delay reservoir computers and high-speed information processing capacity. *IEEE International Conference on Computational Science and Engineering*. doi: 10.1109/CSE-EUC-DCABES.2016.230.

[4] Henriques, J., Pazart, L., Grigoryeva, L., Muzart, E., Beaussant, Y., Haffen, E., Moulin, T., Aubry, R., Ortega, J.-P., Gabriel, D. 2016. Bedside evaluation of the functional organization of the auditory cortex in patients with disorders of conciousness. *PLOS ONE*. DOI: 10.1371/journal.pone.0146788.

[5] Grigoryeva, L., Henriques, J., Larger, L., Ortega, J.-P. 2015. Optimal nonlinear information processing capacity in delay-based reservoir computers. *Scientific Reports*, 5(12858), 1-11; doi: 10.1038/ srep12858. Nature Publishing Group. (with Supplementary material, 24 pp).

[6] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2015. Estimation and empirical performance of non-scalar dynamic conditional correlation models. 67 pages. To appear in *Computational Statistics & Data Analysis*. http://dx.doi.org/10.1016/j.csda.2015.02.013

[7] Grigoryeva, L., Henriques, J., Larger, L., and Ortega, J.-P. 2014. Stochastic nonlinear time series forecasting using time-delay reservoir computers: Performance and universality. *Neural Networks, Volume 55*, P. 59–71.

[8] Grigoryeva, L., Ortega, J.-P. 2014. Hybrid forecasting with estimated temporally aggregated linear processes. *Journal of Forecasting, Volume 33*, P. 577–595.

[9] Grigoryeva, L., Ortega, J.-P. 2014. Asymptotic forecasting error evaluation for estimated temporally aggregated linear processes. To appear in *International Journal of Computational Economics and Econometrics*.

[10] Grigoryeva, L., Ortega, J.-P., Zub, S. 2014. Stability of Hamiltonian relative equilibria in symmetric magnetically confined rigid bodies. *Journal of Geometric Mechanics, Volume 6*, Number 3, P. 373–415.

[11] Gabriel, D., Henriques, J., Comte, A., Grigoryeva, L., Ortega, J.-P., Cretin, E., Haffen, E., Moulin, T., Pazart, L., Aubry, R. 2015. Substitute or complement? Defining the relative place of EEG and fMRI in the detection of voluntary brain reactions. To appear in *Neuroscience*.

[12] Henriques, J., Gabriel, D., Grigoryeva, L., Haffen, E., Moulin, T., Aubry, R., Pazart, L., and Ortega, J.-P. 2014. Protocol design challenges in the detection of awareness in aware subjects using EEG signals. *Clinical EEG and Neuroscience*, doi: 10.1177/1550059414560397.

[13] Gabriel, D., Comte, A., Henriques, J., Magnin, E., Grigoryeva, L., Ortega, J.-P., Haffen, E., Moulin, T., Pazart, L., Aubry, R. 2013. EEG- and fMRI-based communication tools in disorders of consciousness: which is the most reliable method? *Clinical EEG and Neuroscience, 44(4), E111*.

[14] Grygor'yeva, L. V. 2008. Dynamical model of a free body in central and non-central physical fields and its Maple-analysis. *Bulletin of the University of Kyiv (Series: Physics and Mathematics), 2*, Kyiv: P. 61-67. (in Ukrainian)

[15] Grygor'yeva, L. V. 2008. Maple-exploring of a free flywheel suspended by superconductive bearing. *Bulletin of the University of Kyiv (Series: Physics and Mathematics), 1*, Kyiv: P. 75–80.

[16] Grigor'eva, L. V., Kozorez, V. V., and Lyashko, S. I. 2007. Capabilities of the system Maple in studying dynamic systems of magnetically interacting free bodies. *Cybernetics and Systems Analysis, Vol. 43, N. 6*, Springer New York: P. 912-916. (Translated from Kibernetika i Sistemnyi Analiz, No. 6, pp. 178B–183, November-December 2007)

[17] Grygor'yeva, L. V., Kozorez, V. V., Kozorez, A. V., Lyashko, S. I. 2007. Dynamic problem of two free cylindrical magnets and its Maple-modelling. *Bulletin of the National Academy of Sciences of Ukraine, 11*, Kyiv: P. 41–47. (in Ukrainian)

[18] Grygor'yeva, L. V., Kozorez, V. V., Lyashko, S. I. 2007. Maple-modelling of dynamics for rigid body with fixed point in the field of magnetic and electric forces. *Bulletin of the National Academy of Sciences of Ukraine, 8*, Kyiv: P. 45–48. (in Ukrainian)

[19] Kozoriz, V. V., Lyashko, S. I., Tkachenko, R. L., Grigoryeva, L. V. 2007. Maple-exploring of super-conductive levitation in circle-dipole system (MPW in dipole due to circle). *Journal of Applied and*

Computational Mathematics, 1(94), Kyiv: P. 48–55.

CONFERENCE PUBLICATIONS, RECENT CONFERENCE AND SEMINAR TALKS

[1] Reservoir computing: information processing of stationary signals. The 19th IEEE International Conference on Computational Science and Engineering (CSE 2016). Ecole de Mines. Paris, August 25, 2016.

[2] Volatility forecasting using global stochastic financial trends extracted from non-synchronous data. Research Seminar, Chair of Statistics, Augsburg, Germany, June 9, 2016.

[3] Volatility forecasting using global stochastic financial trends extracted from non-synchronous data. The 10th Bachelier Colloquium on Mathematical Finance and Stochastic Calculus, Metabief, France, January 22, 2016.

[4] Volatility forecasting using global stochastic financial trends extracted from asynchronous market quotes. The 9th International conference on Computational and Financial Econometrics (CFE 2015), London, December 14, 2015.

[5] Capacity of time-delay reservoir computers in the forecasting, filtering, reconstruction, and parallel processing of stochastic stationary and multidimensional signals. Workshop "Dynamical systems and brain-inspired information processing", Besançon, France, November 3, 2015.

[6] Volatility forecasting using global stochastic financial trends extracted from non-synchronous data. Konstanz-Strasbourg Workshop "Applied Econometrics", Moos, Germany, October 9, 2015.

[7] Grigoryeva, L. 2015. Estimation and empirical performance of non-scalar dynamic conditional correlation models. Mathematical and Computational Finance Laboratory (MCFL) at the Department of Mathematics and Statistics, University of Calgary, Canada, July 8.

[8] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2015. Estimation, reduction, and empirical performance of non-scalar dynamic conditional correlation (DCC) and multivariate volatility (DVEC) models. Workshop "Nouveaux développements dans la modélisation et la prévision des risques extrêmes en finance", Aix-Marseille School of Economics, France, May 18-19.

[9] Grigoryeva, L. 2015. Volatility and time series forecasting with non-scalar parametric models and machine-learning based techniques. University of Konstanz, Konstanz, Germany, May 5.

[10] Grigoryeva, L., Henriques, J., Larger, L., Ortega, J.-P. 2015. Reservoir computing: optimal nonlinear information processing capacity, performance, and universality. Applications to stochastic nonlinear time series forecasting. Journée du Laboratoire de Mathématiques de Besançon, France, January, 8.

[11] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Reduction and composite likelihood estimation of non-scalar multivariate volatility models. The 8th International conference on Computational and Financial Econometrics (CFE 2014), Pisa, Italy, December, 6-8.

[12] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Reduction and composite likelihood estimation of non-scalar multivariate volatility models. The Weekly Seminar of International Laboratory of Quantitative Finance, National Research University Higher School of Economics, Moscow, Russia, November, 21.

[13] Grigoryeva, L., Ortega, J.-P., Zub, S. S. 2014. Stability of Hamiltonian relative equilibria in symmetric magnetically confined rigid bodies: orbitrons, levitrons, and generalizations. The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, July, 7-11.

[14] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Estimation and empirical performance of non-scalar dynamic conditional correlation (DCC) models. The 1st Conference of the International Association for Applied Econometrics (IAAE 2014), Queen Mary University of London, London, UK, June, 26-28.

[15] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Non-scalar dynamic conditional correlation models. Estimation and empirical performance. Conférence "Séries Temporelles, Économétrie et Finance", Besançon, May, 6.

[16] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Estimation and empirical performance of multivariate non-scalar dynamic conditional covariance and correlation models. The Weekly Workshop of International Laboratory of Quantitative Finance, National Research University HSE, Moscow, Russia, March, 24.

[17] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2014. Estimation and empirical performance of non-scalar dynamic conditional correlation (DCC) models. The 8th Bachelier Colloquium on Mathematical Finance and Stochastic Calculus, Metabief, France, January.

[18] Bauwens, L., Grigoryeva, L., Ortega, J.-P. 2013. Estimation and empirical performance of non-scalar dynamic conditional correlation (DCC) models. The 7th International conference on Computational and Financial Econometrics (CFE 2013), London, Great Britain, December, 14-16.

[19] Grigoryeva, L., Henriques, J., Larger, L., Ortega, J.-P. 2013. Stochastic nonlinear time series forecasting using time-delay reservoir computers: performance and universality. Workshop: Experimental Reservoir Computing, Besançon, France, October, 14-15.

[20] Bauwens, L., Grigoryeva, L. , Ortega, J.-P. 2013. Estimation and empirical performance of non-scalar DCC models. CORE-ILSM Lecture Series, Louvain-la-Neuve, Belgium, 30 September – 2 October.

[21] Grigoryeva, L. , Ortega, J.-P. 2013. Estimation of sizeable matrix based DCC models via Bregman divergences. CEQURA-2013, Munich, Germany, September, 23-24.

[22] Grigoryeva, L. , Ortega, J.-P. 2013. Hybrid forecasting with estimated temporally aggregated linear processes. IwCEE: International workshop on Computational Economics and Econometrics, Rome, Italy, June, 12-13.

[23] Grigoryeva, L. , Ortega, J.-P., Zub, S. 2013. Stability of Hamiltonian relative equilibria in symmetric magnetically confined rigid bodies. ICMAT School: 7th International Summer School on Geometry, Mechanics, and Control, La Cristalera, Spain, July, 1-5.

[24] Grigoryeva, L., Ortega, J.-P. 2013. Finite sample forecasting with estimated temporally aggregated linear processes. The Seventh Bachelier Colloquium on Mathematical Finance and Stochastic Calculus, Metabief, France, January, 13-20.

[25] Grigoryeva, L., Ortega, J.-P. 2012. Forecasting with estimated multi-frequency temporally aggregated linear processes. The 6th International conference on Computational and Financial Econometrics (CFE 2012), Oviedo, Spain, December, 1-3.

[26] Ortega, J.-P., Grigoryeva, L. 2012. Temporal aggregation, forecasting, and path continuation in estimated parametric stochastic models. Third Iberoamerican Meeting on Geometry, Mechanics and Control, Salamanca, Spain, September, 3-7.

[27] Grygor'yeva, L. 2012. Non-contact confinement of rigid bodies. Focus Program on Geometry, Mechanics and Dynamics, the Legacy of Jerry Marsden, Toronto, Canada, July.

[28] Grygor'yeva, L. , Ortega, J.-P. 2012. Finite sample forecasting with estimated temporally aggregated linear processes. ICMAT School: 6th International Summer School on Geometry, Mechanics, and Control, La Cristalera, Spain, June, 22-26.

[29] Grygor'yeva, L. 2011. Dynamics and stability of magnetic systems with superconducting elements. DSMSI 2011: Dynamical System Modeling and Stability Investigation Conference, Kiev, Ukraine, May, 25-27.

[30] Grygor'yeva, L. 2010. Mathematical modelling of static and dynamic configurations of magnetically interacting rigid bodies. Seminar On Differential Equations: Masaryk University (Faculty of Science, Department of Mathematics and Statistics), Brno, Czech Republic, November 15.

[31] Grygor'yeva, L. 2010. Dynamics of a flywheel with superconductive bearing based on Magnetic Potential Well (MPW) phenomenon. ASC 2010: Applied Superconductivity Conference, Washington, USA, August 4.

[32] Grygor'yeva, L., Kozorez, V., Fedorchuk, M. 2010. Modelling of the MPW under condition of superconductivity destruction. The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications: Dresden University of Technology, Dresden, Germany, May 25–28.

[33] Grygor'yeva, L. 2010. Dynamics and stability of multibody magnetic systems in Magnetic Potential Well (MPW). The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications: Dresden University of Technology, Dresden, Germany, May 25–28.

[34] Grygor'yeva, L. V., Kozoriz, V. V. 2008. Maple-exploring of a free flywheel suspended by super-conductive bearing. Maglev 2008: Proceedings of The 20th Inter-national Conference on Magnetically Levitated Systems and Linear Drives, San Diego, USA, December 15–18.

[35] Grygor'yeva, L. V., Kozoriz, V. V., Ljashko, O. 2008. Maple-exploring of a free flywheel suspended by superconductive bearing. SPEEDAM 2008: Proceedings of The 19th International Symposium on Power Electronics, Electrical Drives, Automation and Motion, Ischia, Italy, June 11–13.

[36] Grygor'yeva, L. V., Kozoriz, V. V. 2008. On one generalization in two-body problem for motion in central and non-central physical fields. Proceedings of the 9th Crimean International Mathematical School "Lyapunov Functions Method and Applications", Alushta, Ukraine, September 15-21. (in Russian)

[37] Grygor'yeva, L. V., Kozoriz, V. V., Tyagulskyi, V. G. 2008. On stability of static and dynamic configurations with a free body in Magnetic Potential Well. Stab08: Proceedings of the 10th International E.S. Pyatnitskiy Symposium "Stability and Vibrations of Nonlinear Control Systems", Moscow, Russia, June 3-6. (in Russian)

[38] Grygor'yeva, L. V. 2008. Models of dynamic magnetically interacting free bodies and Maple-analysis. Proceedings of the XIIth International Scientific M. Kravchuk Conference, Kyiv, Ukraine, May 15–17. (in Ukrainian)

[39] Grygor'yeva, L. V. 2007. MAPLE-modelling of some dynamical problems of magnetically interacting bodies. DSMSI–2007: Thesis of Conference Reports of Dynamical System Modelling and Stability Investigation, Kyiv, Ukraine, May 22–25.

ORGANIZATION OF SCIENTIFIC EVENTS	November 2-3, 2015: The Workshop "Dynamical systems and brain-inspired information processing". Besançon. France. 60 participants. Coorganizer.
	January 11-18, 2015: The Ninth Bachelier Colloquium on Mathematical Finance and Stochastic Calculus. Metabief. France. 90 participants. Coorganizer.
	January 13-19, 2014: The Eighth Bachelier Colloquium on Mathematical Finance and Stochastic Calculus. Metabief. France. 90 participants. Coorganizer.
	January 20-27, 2014: The First Bachelier Winter School on Mathematical Finance and Stochastic Calculus. Metabief. France. 90 participants. Coorganizer.

May 25-27, 2011: Dynamical System Modeling and Stability Investigation Conference (DSMSI). Kyiv. Ukraine. 60 participants. Coorganizer.

May 27-29, 2009: Dynamical System Modeling and Stability Investigation Conference (DSMSI). Kyiv. Ukraine. 70 participants. Coorganizer.

PROFESSIONAL NETWORKS

2012-present: Participant in the Network "Geometry, Mechanics, and Control Network" funded by the Spanish Ministry of Education and Science.

EDITORIAL ACTIVITY

Guest editor for the International Journal of Computational Economics and Econometrics.
Special issue entitled "Recent Developments in Forecasting and Macroeconometrics".

TEACHING EXPERIENCE

Universität Konstanz, Konstanz, Germany

Probability theory and statistical inference (Master Social Economics and Data Analysis)	**WS 2015**
Topics in advanced econometrics (Graduate School of Decision Sciences area (D): Information Processing and Statistical Analysis)	**WS 2015**
Applied Time Series Analysis Master Level	**SS 2016**

Université de Franche-Comté, Besançon, France

Continuous and discrete time Markov chains and applications (Master 2, Statistical Modeling)	**2014–2015**
Signal treatment and approximation (Master 2, Statistical Modeling)	**2014–2015**

**Kyiv National Economics University
(Vadim Getman Kyiv National Economics University)**, Kyiv, Ukraine

Operational research (4th year, Finance and Economics)	**2009–2010**
Discrete mathematics (2nd year, Information Technologies and Computer Science)	**2009–2010**
Econometrics (3rd year, Economics and Management)	**2009–2010**

Taras Schevchenko National University of Kyiv, Kyiv, Ukraine

Calculus (1st year, Mathematical Modeling)	**2005–2006**

CORPORATE EXPERIENCE

iBank.com & Credentrust Software, California, USA

Database and Web Application Developer (MySQL, PostgreSQL, Microsoft SQL Server)	**2007–2009**

Flextronics, Kyiv, Ukraine

C/C++ Developer	**Oct. 2006–Dec. 2006**

UkrsoftLLC, Kyiv, Ukraine

C/C++ Developer	**Oct. 2005–Jan. 2006**