

# MÁRIA-MAGDOLNA ERCSEY-RAVASZ



## PERSONAL INFORMATION

Name **Ercsey-Ravasz**  
First name **Maria-Magdolna**  
Address M. Kogalniceanu Street, nr. 1, room 225, 400008, Cluj-Napoca, Romania  
Phone: 0745-217623  
E-mail: [ercsey.ravasz@phys.ubbcluj.ro](mailto:ercsey.ravasz@phys.ubbcluj.ro)  
Homepage: <http://sirius.phys.ubbcluj.ro:33380/Ercsey-Ravasz>  
GoogleScholar: <https://scholar.google.ro/citations?user=EvImRmMAAAA&hl=en>  
ResearcherID: E-2098-2017  
ORCID: 0000-0003-4428-9953  
Citizenship Romanian  
Date of birth 11 September 1980  
Sex Female  
**Occupation** **Tenured Research Faculty, Babeş-Bolyai University, Faculty of Physics, “Ioan Ursu” Institute**

## EDUCATION

2008 **PhD joint degree** (Summa cum laude)  
**in Physics** at Babeş-Bolyai University, Faculty of Physics, Cluj-Napoca, Romania (supervisor: Prof. Zoltán Néda)  
**in Information Technology (Infobionics)** at Péter Pázmány Catholic University, Faculty of Information Technology, Budapest, Hungary (Supervisor: Prof. Tamás Roska).  
2004 **Master in Computational Physics**  
Babeş-Bolyai University, Faculty of Physics, Cluj-Napoca, Romania (supervisor: Prof. Zoltán Néda)  
2003 **Bachelor in Physics**  
Babeş-Bolyai University, Faculty of Physics, Cluj-Napoca, Romania (supervisor: Prof. Zoltán Néda)

## CURRENT POSITION

2014 – Tenured Research Faculty at the Babeş-Bolyai University, Faculty of Physics, Romania  
2018- Researcher and vicepresident of the Transylvanian Institute of Neuroscience

## PREVIOUS POSITIONS

- 2016 - 2018 Researcher at the Romanian Institute of Science and Technology  
2012 – 2014 Research Fellow in a Marie Curie International Incoming Fellowship  
Babeş-Bolyai University, Faculty of Physics, Romania  
2008 – 2011 Postdoc  
Department of Physics, Interdisciplinary Center for Network Science and  
Applications, University of Notre Dame, IN, USA  
2011 – 2012 Principal Investigator in a Starting Research Grant funded by the Romanian  
Government  
Babeş-Bolyai University, Faculty of Physics, Romania

## FELLOWSHIPS AND AWARDS

- 2015 *Constantin Miculescu Award* of the Romanian Academy of Sciences  
2014 UNESCO-L’Oreal Fellowship of *Young Women Researchers in Romania*  
2011 *Award of Young Researchers* received from the Transylvanian Committee of  
the Hungarian Academy of Sciences, Romania  
2007 Erasmus Fellowship, Faculty of Electrical Engineering, Catholic University  
of Leuven, Belgium  
2003, Aug. Short Term Research Fellowship, KFKI Central Research Institute of Physics,  
Budapest, Hungary  
2003 *Junior Bolyai János Award* received from the Hungarian Academy of  
Sciences, Hungary  
2003, Mar. Short Term Research Fellowship, Bergen Computational Physics Laboratory,  
Bergen, Norway  
2002, Nov. Short Term Research Fellowship, Bergen Computational Physics Laboratory,  
Bergen, Norway

## RESEARCH GRANTS

- 2012-2014 Marie Curie International Incoming Fellowship, FP7-POEPL-2011-  
IIF-299915. Project title: “Chaotic Cellular Neural/Nonlinear Networks  
for Solving Constraint Satisfaction”  
2011-2014 Principal investigator of the Romanian Young Researcher’s Grant PN-  
II-RU-TE-2011-03-121. Project title: “A continuous-time approach to  
constraint satisfaction: optimization hardness as transient chaos”  
2012-2016 Principal investigator in a Partnership Project in Applicative Research  
funded by the Romanian UEFISCDI: PN-II-PT-PCCA-2011-3.2-0895.  
Project title: „Improving scientific evaluation through analysis of  
scientific networks”.  
2016-2018 Principal investigator in a Partnership Project in Applicative Research  
funded by the Romanian UEFISCDI: Bridge Grant PN-III-P2-2.1-BG-  
2016-0252. Project title: “Developing an optimal scientometric  
indicator”  
2016-2019 Principal investigator and member of the steering committee in a  
Horizon 2020-PHC-02-2015 international project: “SyBil-AA: Systems  
Biology of Alcohol Addiction: Modelling and validating disease state  
networks in human and animal brains for understanding  
pathophysiology, predicting outcomes and improving therapy”. The  
project includes 12 institutes from 8 countries.

- 2018-2020 Principal investigator in a FLAG-ERA JTC 2017 International Project, CORTICITY: “Comparative analysis of cortical circuits in mouse, NHP and humans.”
- 2018-2020 Principal investigator of the Romanian Young Researcher’s Grant PN-III-P1-1.1-TE-2016-1457. Project title: “Continuous dynamical systems as state transition networks: a new perspective on brain signal analysis”

### **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

- 2011 – One Postdoc (Dr. Róbert Sumi)/ One PhD (Botond Molnár, Istvan Papp)/ One Master Student (Dávid Deritei)
- 2016- Postdoc: Istvan Toth, Botond Molnar; PhD students: Levente Varga Babeş-Bolyai University, Faculty of Physics, Romania

### **TEACHING ACTIVITIES**

- 2018 Teacher of Masters Level Course: „Networks and complex systems”, Babes-Bolyai University, Physics Department, RO.
- 2011 Teacher of a Graduate Level Course – Introduction to Network Science, University of Notre Dame, IN, USA.
- 2006 Graduate Teaching Assistant – Evolution of Physics and Knowledge, Babes-Bolyai University, Romania
- 2006 Graduate Teaching Assistant – Numerical Methods in Physics, Babes-Bolyai University, Romania
- 2005 Graduate Teaching Assistant –Problem-solving tutorial in Quantum Mechanics I., Babes-Bolyai University, Romania
- 2004,2005 Graduate Teaching Assistant – Nonlinear Dynamical Systems, Péter Pázmány Catholic University, Romania

### **COMMISSIONS OF TRUST**

- 2013 Reviewer for the UEFISCDI (Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding) in the 2013/2014 “Partnership Grants in Applicative Research” program
- 2008 – 2014 Referee for scientific journals: New Journal of Physics; Physical Review Letters; Physical Review E; PLoS One; European Physics Letters; European Physics Journal B; IEEE Circuits and Systems, Scientific Reports.
- 2014 Scientific Evaluator for the Romanian UEFISCDI in the midterm evaluation of “Starting Grants” and “Ideas” programs.
- 2014 President of the Physics Committee in the Transylvanian Committee of the Hungarian Academy of Sciences
- 2017- Vicepresident of the Transylvanian Institute of Neuroscience

### **MAJOR COLLABORATIONS**

- 2016- *Raul Muresan*, Transylvanian Institute of Neuroscience, Cluj-Napoca;

- Wolfgang Sommer*, Central Institute for Mental Health, Mannheim.  
Topic: Effect of alcohol on mental health.
- 2008- *Z. Toroczkai*, University of Notre Dame, USA. Topics: Analysing and modelling the inter-areal cortical network; Solving optimization problems with transiently chaotic dynamical systems; Other studies related to complex networks, such as the USA roadway network, international food-trade network etc.
- 2008- *H. Kennedy, K. Knoblauch*, INSERM 846, Lyon, France; *N. Markov*, Yale University, USA; Topic: Analysing and modelling the inter-areal cortical network based on their retrograde tracing experimental data.
- 2013- *E. Ravasz Regan*, Harvard Medical School, Boston, USA; Topic: Dynamical modularity in the cell regulatory network.
- 2012- *R. Florian*, Romanian Institute of Science and Technology, Romania; *Zs. Lázár, F. Járαι-Szabó, Z. Néda*, Babes-Bolyai University, Romania. Topic: Improving scientific evaluation through analysis of scientific networks.
- 2011-2012 *J. Baranyi*, Inst of Food Research, UK; Topic: Analysing the international food-trade network and its vulnerability.
- 2005-2006 *Gy. Szabó, A. Szolnoki*, KFKI Central Research Institute of Physics, Hungary. Topic: Game theory and population dynamical models.

## ECHOES ABOUT RESEARCH RESULTS IN NEWS MEDIA

- July 2011 “Research reveals brain network connections”, Notre Dame Newswire July 13, 2011, Medical News Today, Eurekalert News, Science Daily News, Scientific Computing News, Bioscience Technology News July 14 2011. <http://www.sciencedaily.com/releases/2011/07/110713161828.htm>
- “Closer look at the brain network”, Szabadsag (“Freedom”) Daily Hungarian Newspaper in Cluj-Napoca, Romania. <http://www.szabadsag.ro/szabadsag/servlet/szabadsag/template/article%2CPArticleScreen.vm/id/60953>
- October 2011 “Notre Dame physicists propose solutions for constraint satisfaction problems”, Notre Dame Newswire, Physics today, October 7, 2011
- 2012 “The chaos within Sudoku” - Huffington Post, Daily Mail, Romanian Income Magazin, Szabadság Daily News Paper, Antena 3 TV channel.
- 2016 Our paper in PLoS Biology: <http://news.nd.edu/news/68496-network-physicist-sheds-light-on-alzheimers-schizophrenia/>; Science Daily: <https://www.sciencedaily.com/releases/2016/07/160721151222.htm>
- 2016 Interview: <http://news.ubbcluj.ro/maria-ercsey-ravasz-fizician-si-cercetator-stiintific-cu-phd-obtinut-in-fizica-la-facultatea-de-fizica-ubb-si-in-tehnologia-informatiei-la-universitatea-catolica-peter-pazmany-din-budapesta/>

## LANGUAGE SKILLS

Hungarian – maternal language; Romanian – fluent; English – fluent; German – beginner.

## COMPUTING SKILLS

C, C++, Matlab, Mathematica. Network visualisation: Pajek, Cytoscape, Gephi.

# PUBLICATION LIST

October 4, 2018

WoS: 1022 citations, h-index: 15,

Google Scholar: 1765 citations , h-index 17

## ISI ARTICLES (\* indicates corresponding author)

### 2018

1. B Molnár, F. Molnar, M Varga, Z Toroczkai, **M Ercsey-Ravasz**, „A high-performance analog max-SAT solver”, *Nature Communications*, vol. 9, 4864, pp. 1-12, 2018.
2. Răzvan Gămănuț, Henry Kennedy, Zoltán Toroczkai, **Mária Ercsey-Ravasz**, David C Van Essen, Kenneth Knoblauch, Andreas Burkhalter, The Mouse Cortical Connectome, Characterized by an Ultra-Dense Cortical Graph, Maintains Specificity by Distinct Connectivity Profiles, *Neuron* 97, 698-715. e10 , 2018.
3. Xunzhao Yin, Behnam Sedighi, Melinda Varga, **Mária Ercsey-Ravasz**, Zoltán Toroczkai, Xiaobo Sharon Hu, „Efficient analog circuits for Boolean satisfiability”, *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 26 (1), pp. 155-167, 2018.

### 2017

4. H. Noori, J. Schottlet, **M. Ercsey-Ravasz**, A. Cosa-Linan, M. Varga, Z. Toroczkai, R. Spanagel, *PLoS Biology*, 15 (7), e2002612 2017.
5. Zs. I. Lazar, I. Papp, L. Varga, F. Jarai-Szabo, D. Deritei, **M. Ercsey-Ravasz\***, “Stochastic graph Voronoi tessellation reveals community structure”, *Physical Review E*, vol. 95, 022306, 2017.

### 2016

6. Sz. Horvát†, Răzvan Gămănuț†, **Mária Ercsey-Ravasz†** Loïc Magrou, Bianca Gămănuț, David C. Van Essen, Andreas Burkhalter, Kenneth Knoblauch, Zoltán Toroczkai, Henry Kennedy, “Spatial embedding and wiring cost constrain the functional layout of cortical networks in rodents and primates”, *PLoS Biol.*, vol. 14, e1002512, 2016. († indicates equal contribution).
7. R. Sumi, M. Varga, Z. Toroczkai, **M. Ercsey-Ravasz\***, “Order-to-chaos transition in the hardness of random Boolean satisfiability”, *Physical Review E*, vol. 93, 052211, 2016
8. D. Deritei, W.B.Aird, **M. Ercsey-Ravasz**, E. Ravasz Regan, “Principles of dynamical modularity in biological regulatory networks”, *Scientific Reports*, vol. 6, 21957, 2016

### 2014

9. Y. Ren, **M. Ercsey-Ravasz**, P. Wang, M.C. Gonzalez, Z. Toroczkai, “Predicting commuter flows in spatial networks using a radiation model based on temporal ranges”, *Nature Communications*, vol. 5, 5347 (2014).
10. D. Deritei, Zs. Lazar, I. Papp, F. Jarai-Szabo, R. Sumi, L. Varga, ER Regan, **M. Ercsey-Ravasz\***, “Community detection by graph Voronoi diagrams”, *New Journal of Physics*, vol. 16, 063007, 2014.
11. R. Sumi, B. Molnar, **M. Ercsey-Ravasz\***, “Robust optimization with transiently chaotic dynamical systems”, *European Physics Letters*, vol. 106, 40002, 2014.
12. N.T. Markov, **M. Ercsey-Ravasz**, MA. Gariel, AR. Ribiero Gomes, C.Lamy, J. Vezoli, P. Misery, A. Falchier, R. Quilodran, J. Sallet, R. Gamanut, C. Huissoud, S. Clavagnier, P. Giroud, DS. Marinier, P. Barone, C. Dehay, Z. Toroczkai, K. Knoblauch, D. C. Van Essen, H. Kennedy, “A weighted and directed interareal connectivity matrix for macaque cerebral cortex”, *Cerebral Cortex*, vol. 24, pp. 17-36, 2014

## 2013

13. **M. Ercsey-Ravasz**, N.T. Markov, C. Lamy, D.C. Van Essen, K. Knoblauch, Z. Toroczkai, H. Kennedy, “A predictive network model of cerebral cortical connectivity based on a distance rule.”, *Neuron* vol. 80, pp. 184-197, 2013
14. N.T. Markov, **M. Ercsey-Ravasz**, D.C. Van Essen, K. Knoblauch, Z. Toroczkai, H. Kennedy, "Cortical High-density Counter-stream Architectures", *Science* vol. 342, pp. 1238406:1-15, 2013
15. N.T. Markov, **M. Ercsey-Ravasz**, C. Lamy, AR. Gomes, L. Magrou, P. Misery, P. Giroud, P. Barone, C. Dehay, Z. Toroczkai, K. Knoblauch, D.C. Van Essen, H. Kennedy. "The role of long-range connections on the specificity of the macaque interareal cortical network" *PNAS* vol. 110, pp. 5187-5192, 2013
16. B. Molnár, **M. Ercsey-Ravasz\***, „Asymmetric Continuous-Time Neural Networks without Local Traps for Solving Constraint Satisfaction Problems”, *PloS One* 8(9), e73400, pp. 1-13, 2013

## 2012

17. **M. Ercsey-Ravasz**, Z. Toroczkai, „The Chaos Within Sudoku”, *Scientific Reports* 2, pp. 755-762, 2012
18. **M. Ercsey-Ravasz**, Z. Toroczkai, Z. Lakner, J. Baranyi, „Complexity of the international agro-food trade network and its impact on food safety”, *PloS One* 7(5), e37810, pp. 1-7, 2012.
19. **M. Ercsey-Ravasz**, R. Lichtenwalter, N.V. Chawla, Z. Toroczkai, „Range-limited Centrality Measures in Weighted and Non-weighted Complex Networks”, *Physical Review E* vol. 85, 066103, pp. 1-14, 2012

## 2011

20. **M. Ercsey-Ravasz**, Z. Toroczkai, „Optimization hardness as transient chaos in an analog approach to constraint satisfaction:”, *Nature Physics*, vol. 7, pp. 966-971, 2011.
21. N.T. Markov, P. Misery, A. Falchier, C. Lamy, J. Vezoli, R. Quilodran, P. Giroud, M.A. Gariel, **M. Ercsey-Ravasz**, L.J. Pilaz, C. Huissoud, P. Barone, C. Dehay, Z. Toroczkai, D.C. Van Essen, H. Kennedy, K. Knoblauch. “Weight consistency specifies regularities of macaque cortical network” *Cerebral Cortex*, vol. 21(6), 1254-1272, 2011.

## 2010

22. **M. Ercsey-Ravasz**, Z. Toroczkai, „Centrality scaling in large networks”, *Physical Review Letters*, vol. 105, 038701, pp. 1-14, 2010
23. F. Morcos, S. Chatterjee, C. L. McClendon, P.R. Brenner, R. Lopez-Rendon, J. Zintsmaster, **M. Ercsey-Ravasz**, C. R. Sweet, M.P. Jacobson, J.W. Peng, J. A. Izaguirre, “Modelling conformational ensembles of slow functional motions in Pin1-WW”, *PLoS Computational Biology* 6, e1001015, pp. 1-13, 2010.

## 2009

24. Z. Néda, R. Sumi, **M. Ercsey-Ravasz**, M. Varga, B. Molnar, Gy. Cseh, „Correlation clustering on networks”, *J. of Physics A: Mathematical and Theoretical*, vol. 42, 345003, pp. 1-15, 2009.
25. **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Cellular Neural Networks for NP-hard optimization”, *EURASIP Journal on Advances in Signal Processing, Special issue: CNN Technology for Spatio-temporal Signal Processing*, doi: 10.1155/2009/646975, pp. 1-7, 2009.

## 2008

26. **M. Ercsey-Ravasz**, Zs. Sárközi, Z. Néda, A. Tunyagi, I. Burda, „Collective behaviour of electronic fireflies”, *European Journal of Physics B*, vol. 65, pp. 271-277, 2008.
27. **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Stochastic optimization of spin-glasses on cellular neural/nonlinear network based processors”, *Physica A: Statistical mechanics and its Applications*, vol. 388, pp. 1024-1030, 2008.
28. **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Statistical Physics on Cellular Neural Network Computers”, *Physica D: Nonlinear Phenomena, Special Issue: „Unconventional computing: Quo vadis?”*, vol. 237, no.9, pp. 1226-1234, 2008.

## 2006

29. **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Stochastic simulations on the cellular wave computers”, *European Journal of Physics B*, vol. 51., no. 3, pp. 407-412, 2006.
30. **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Perspectives for Monte Carlo

simulations on the CNN Universal Machine”, *Int. Journal of Modern Physics C*, vol. 17., no.6, pp. 903-923, 2006.

31. Z. Néda, R. V. Florian, **M. Ravasz**, A. Libál, and G. Györgyi, „Phase transition in an optimal clusterization model”, *Physica A*, vol. 362, no. 2, pp. 357–368, 2006.

## 2001-2005

32. A. Szolnoki, G. Szabó, **M. Ravasz**, “Three-state Potts model in combination with the rock-scissors-paper game”, *Physical Review E*, vol. 71, 027102, pp. 1-4, 2005.
33. **M. Ravasz**, Gy. Szabó, A. Szolnoki, "Spreading of families in cyclic predator-prey models", *Physical Review E*, vol. 70, 012901, pp.1-4, 2004.
34. Z. Néda, K.-t. Leung, L. Józsa, **M. Ravasz**, "Spiral cracks in drying precipitates", *Physical Review Letters*, vol. 88, 095502, pp. 1-4 , 2002.
35. K.-t. Leung, L. Józsa , **M. Ravasz**, Z. Néda, "Spiral cracks without twisting", *Nature*, vol. 410, pp. 166, 2001.

## BOOK CHAPTERS

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- K. Knoblauch, **M. Ercsey-Ravasz**, H. Kennedy, Z. Toroczkai, “The Brain in Space”, in The 22nd Colloque Médecine et Recherche of the Fondation Ipsen in the Neurosciences series: "Micro-, meso- and macro-connectomics of the brain", Fondation IPSEN, Paris, France. Eds: H. Kennedy, D. Van Essen, Y. Christen Springer, Heidelberg, pp 45-74, 2016.
- **M. Ercsey-Ravasz**, Z. Toroczkai, ”Döntések fizikája és rejtvények káosza” (“Physics of decision making and chaos of puzzles”) in A fizika, matematika és művészet találkozása az oktatásban, kutatásban (Physics, mathematics and arts in education and research), Ed.: A. Juhász, T. Tél, Publisher: Science Department of the Eötvös Lóránd University, Hungary, 2013.
- N.T. Markov, **M. Ercsey-Ravasz**, M.-A. Gariel, C. Dehay, K. Knoblauch, Z. Toroczkai, H. Kennedy. “The tribal networks of the cerebral cortex”, in *Cerebral Plasticity*, eds: L.M. Chalupa, N. Berardi, M. Caleo, L. Galli-Resta, T. Pizzorusso, MIT Press, Cambridge MA, 2011.
- T. Roska, L. Belády, **M. Ercsey-Ravasz**, „Cellular Wave Computing in Nanoscale via Million Processor Chips”, in *Cellular Nanoscale Sensory Wave Computing*, eds: C. Baatar, W. Porod, T. Roska. Springer, New York, 2010.

## PEER REVIEWED PROCEEDINGS

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- B. Molnar, R.Sumi, **M. Ercsey-Ravasz**, “A CNN SAT-solver robust to noise”, *Proc. of the 14<sup>th</sup> IEEE Int. Conf. on Cellular Nanoscale Networks and their Applications*, PID3320585, Notre Dame, IN, USA, August 2014.



- B. Molnar, **M. Ercsey-Ravasz**, “Analog dynamics for solving max-SAT problems”, *Proc. of the 14<sup>th</sup> IEEE Int. Conf. on Cellular Nanoscale Networks and their Applications*, PID3320591, Notre Dame, IN, USA, August 2014.
- I. Papp, **M. Ercsey-Ravasz**, D. Deritei, R. Sumi, F. Jarai-Szabo, R.V. Florian, A.I. Cabuz, Zs.I. Lazar, “The P-index: Hirsch index of individual publications” *Proc. of the International Society of Scientometrics and Informetrics Conference, ISSI2013*, pp. 2086-2088, Vienna, Austria, July 2013.
- B. Molnar, Z. Toroczkai, **M. Ercsey-Ravasz**, “Continuous-time neural networks without local traps for solving Boolean satisfiability”, *Proc. of the 13<sup>th</sup> IEEE Int. Conf. on Cellular Nanoscale Networks and their Applications*, Torino, Italy, 4012, pp. 1-6, August 2012.
- N. Markov\*, **M. Ercsey-Ravasz\***, C. Dehay, P. Barone, D. Sappey-Marini er, P. Misery, C. Lamy, P. Giroud, J. Sallet, S. Clavagnier, C. Huissoud, A. Falchier, R. Quilodran, J. Vezoli, M. Gariel, H. Kennedy, K. Knoblauch, Z. Toroczkai, "Principles of inter-areal connections of the macaque cortex", *NeuroComp 2010*, pp. 258-263, October 2010 (\* indicates equal contributions).
- **M. Ercsey-Ravasz**, T. Roska, Z. N eda, „Cellular Neural Networks for NP-hard optimization”, *Proc. of the 11<sup>th</sup> IEEE Int. Conf. on Cellular Neural Networks and their Applications*, (Santiago de Compostela, Spain), pp. 52-56, July 2008.
- **M. Ercsey-Ravasz**, T. Roska, Z. N eda, „Random number generator and Monte carlo type simulations on the CNN-UM”, *Proc. of the 10<sup>th</sup> IEEE Int. Conf. on Cellular Neural Networks and their Applications*, (Istanbul, Turkey), pp. 47-52, August 2006.

## OTHER PUBLICATIONS

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- **M. Ercsey-Ravasz**, Z. Toroczkai, "A donteshozatal es a Sudoku kaosza" ("The Chaos Within Sudoku and Decision Making"), *Termeszeti Vilaga (World of Nature)*, invited paper in the special issue "Kaosz, Kornyezet, Komplexitas" ("Chaos, Environment, Complexity"), Budapest, Hungary, p. 122, 2013
- **M. Ercsey-Ravasz**, T. Roska, Z. N eda, „Analogic Cellular Computers – A New Computational Paradigm” (in Hungarian), *Technical Review*, vol. 42. , pp. 19-25, 2008.
- Z. N eda, **M. Ravasz**, R. Florian, A. Lib al, G. Gy orgyi, „Clustering Formation and Phase Transition in Frustrated Networks” (in Hungarian), *Technical Review*, vol.42, pp. 3-8, 2008.
- **M. Ravasz**, Z. N eda, „Fragmentation of drying granular materials on surfaces with high anisotropy” (in Hungarian), *Modern studies in experimental and theoretical physics*, Scientia, Cluj-Napoca, 2003
- Z. N eda, **M. Ravasz**, R. Florian, A. Lib al, „Phase transition in optimal clusterization” (in Hungarian), *Modern studies in experimental and theoretical physics*, Scientia, Cluj-Napoca, 2003

## CONFERENCES

### ORAL PRESENTATIONS (presentator underlined)

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- **M. Ercsey-Ravasz**, “Modeling the inter-areal cortical network based on the exponential distance rule – comparing mouse, rat and macaque”, ESI Systems Neuroscience Conference “Principles of structural and functional connectivity”, Frankfurt July 24-25, 2017.
- **M. Ercsey-Ravasz**, “A predictive network model of cerebral cortical connectivity based on a distance rule”, 18<sup>th</sup> International Neuroscience Winter Conference, Solden, Austria, April -26, 2016
- **R. Sumi**, Z. Toroczkai, **M. Ercsey-Ravasz** "Chaotic phase transition in an analog approach to constraint satisfaction" *CHAOS 2012 -5th Chaotic Modeling and Simulation International Conference* , Athen, Greece, 12-15 June, 2012
- **M. Ercsey-Ravasz** "Döntések fizikája és rejtvények káosza" ("Physics of decisions and chaos of puzzles"), *A fizika, matematika és művészet találkozási az oktatásban (Physics, mathematics and arts in high school)* Tg. Mures, Romania, 15 August, 2012
- **M. Ercsey-Ravasz**, B. Molnar, Z. Toroczkai, „Solving constraint satisfaction problems via transiently chaotic analog systems and CNN dynamics”, *CNNA 2012*, Torino, Italy, August 2012.
- **M. Ercsey-Ravasz**, Z. Toroczkai, „Analog approaches to hard optimization: from Sudoku to CNNs”, *Statistical Mechanics of Unsatisfiability and Glasses*, Mariehamn, Finland, May 2012.
- **M. Ercsey-Ravasz**, Z. Toroczkai, H. Kennedy, N. Markov, K. Knoblauch, „A distance rule and link weights specify the inter-areal cortical network”, *NETSCI Int. Conf. On Network Science*, Budapest, Hungary, June 2011.
- **J. Baranyi**, **M. Ercsey-Ravasz**, Z. Lakner, Z. Toroczkai, „Network science offers new methods for food safety research”, *NETSCI Int. Conf. On Network Science*, Budapest, Hungary, June 2011.
- **Z. Toroczkai**, **M. Ercsey-Ravasz**, „NP-completeness as analog chaos”, *Complex Driven Systems - From Statistical Physics to the Life Sciences*, Virginia Tech, USA, October 2010.
- **M. Ercsey-Ravasz**, Z. Toroczkai, „Centrality scaling in large networks”, *NETSCI Int. Conf. on Network Science* , Boston, USA, May 2010.
- **M. Ercsey-Ravasz**, T. Roska, Z. Néda , „Cellular Neural Networks for NP-hard optimization”, *CNNA 2008*, Santiago de Compostela, Spain, July 2008.
- **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Spin-glasses on a locally variant cellular neural network”, *Int. Conf. on Complex Systems and Networks*, Sovata, Romania, July 2007.
- **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Statistical Physics on Cellular Neural

Network Computers”, *Int. Conf. „Unconventional computing: Quo vadis?”*, Santa Fe, New Mexico, USA, March 2007

- **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „The Cellular Neural Network Universal Machine in physics”, *Int. Conf. on Computational Methods in Physics*, Cluj, Romania, November 2006
- **M. Ercsey-Ravasz**, T. Roska, Z. Néda, „Applications of Cellular Neural Networks in physics”, *RHIC Winterschool*, Budapest, Hungary, November 2005
- **M. Ercsey-Ravasz**, ”Spreading of families in predator-prey models”, *5<sup>th</sup> Scientific Conference of Transylvanian PhD Students*, Cluj-Napoca, Romania, 2004

## POSTERS

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