

GERGELY PALLA - CURRICULUM VITAE

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PERSONAL DATA Place and date of birth: Budapest, Hungary, July 11, 1975
Citizenship: Hungarian

EDUCATION

2002 Ph.D. in Physics, Eötvös University, Budapest, Hungary,
Supervisor: József Cserti
1998 M.Sc. in Physics, Eötvös University, Budapest, Hungary,
Supervisor: Gábor Vattay

EMPLOYMENT

2008 - Research associate, Statistical and Biological Physics Research Group of HAS, Eötvös University, (Budapest, Hungary).
2007 Research fellow, Statistical and Biological Physics Research Group of HAS, Eötvös University, (Budapest, Hungary).
2004 - 2006 Postdoc, Department of Biological Physics, Eötvös University, (Budapest, Hungary).
2003 - 2004 Research Fellow, Biological Physics Research Group of HAS, (Budapest, Hungary).
2002 Fellow of the Pázmány-Eötvös Foundation for Natural Sciences and Informatics (Budapest, Hungary).

FUNDED PROJECTS

2010 - 2012 For Knowledge on an European Scale, ELTE, (Supported by the European Union and co-financed by the European Social Fund; grant agreement no. TAMOP 4.2.1/B-09/1/KMR-2010-0003; Project leader: László Lovász)
2009 - 2011 Textrend, (Supported by the National Research and Technological Office, NKTH; Project leader: George Kampis)

- 2007 - 2009 Modular Structure of Complex Networks (Supported by: Hungarian National Science Foundation [OTKA]; Grant no.: K68669; Project leader: Gergely Palla).
- 2005 - 2008 Collective Behaviour of Species (Supported by: Hungarian National Science Foundation [OTKA]; Grant no.: T49674; Project leader: Tamás Vicsek).
- 2004 - 2006 Studies of Complex Network (Supported by: Hungarian National Science Foundation [OTKA]; Grant no.: F047203; Project leader: Gergely Palla).
- 2001 - 2004 Quantum Dynamics of Hybrid Nanostructures (Hungarian- British Intergovernmental S&T Cooperation Program; Grant no.: GB-29/01; Hungarian Project Coordinator: József Cserti).

RESEARCH EXPERIENCE

Complex networks (statistical physics approach to complex networks, community finding in networks, tagged networks, etc.)
 Semiclassical- and mesoscopic physics (periodic orbits, trace formulas, semiclassical approximation in mesoscopic systems, etc.)

TEACHING ACTIVITIES

- 2008 - Community finding in networks.
- 2004 - Complex networks.
- 2003 - 2005 Granular media lab.
- 1998 - 2002 Probability Theory.

CONFERENCES

- 2011 Speaker, ECCS 2011, European Conference on Complex Systems, (Vienna, Austria).
 Speaker, SigmaPhi2011, International Conference on Statistical Physics (Larnaca, Cyprus)
 Invited speaker, NetSci 2011, International School and Conference on Network Science, (Budapest, Hungary)
- 2010 Speaker, ECCS 2010, European Conference on Complex Systems, (Lisbon, Portugal).
 Invited speaker, 2nd Complexity Sciences Winter School, (ISCTE, Lisbon, Portugal)
- 2009 Speaker, ECCS 2009, European Conference on Complex Systems, (Warwick, UK).
 Speaker, NetSci 2009, International Workshop on Network Science, (Venice, Italy).

- 2009 Invited speaker, Complexity Sciences Winter School, (ISCTE, Lisbon, Portugal).
- 2008 Invited speaker, SigmaPhi2008, International conference in Statistical Physics (OAC, Kolympari, Greece).
Invited speaker, International workshop on Detection and visualisation of communities in large complex networks, (UCL, Louvain-la-Neuve, Belgium).
Speaker, 72nd Annual meeting of the DPG (Berlin, Germany).
- 2007 Speaker, Meeting of the Eötvös Loránd Physical Society (Eger, Hungary).
Invited speaker, Fluctuations and Noise 2007 conference (Florence, Italy).
Speaker, 5th European Conference on Computational Biology (Eilat, Izrael).
- 2006 Speaker, Numerical Methods in Modern Physics (Cluj-Napoca, Romania).
- 2005 Speaker, 20th Congress of the Society of Hungarian Biophysicists (Debrecen, Hungary).
Poster, COSIN 2005 Final meeting, Conference on Complex Networks: Evolution and Statistical Properties (Salou, Spain).
Speaker, Existence Thematic Institute on Networks and Risks (Budapest, Hungary).
- 2004 Speaker, General Meeting of the Eötvös Loránd Physical Society (Szombathely, Hungary).
Poster, Networks in physics and biology (Orléans, France).
- 2003 Poster, Midterm Conference COSIN Conference on Growing Networks and Graphs in Statistical Physics, Finance, Biology and Social Systems (Rome, Italy).
Poster, MECO conference in Statistical Physics (Saarbrücken, Germany).

PRISES

- 2009 Imre Bródy prize of the Lóránd Eötvös Physical Society.
- 2008 János Bolyai Research Scholarship of the Hungarian Academy of Sciences.
- 2006 Young Scientist Award of the Hungarian Academy of Science.
- 1998 "Excellent student of the faculty" at the Eötvös University.
- 1997 1st prize, National Conference for Student Scientists.

- PUBLICATIONS G. Tibély, P. Pollner, T. Vicsek and G. Palla, Ontologies and tag-statistics, *New Journal of Physics* **14**, 053009 (2012).
doi:10.1088/1367-2630/14/5/053009
- P. Pollner, G. Palla and T. Vicsek, Parallel clustering with CFinder, *Parallel Processing Letters* **22**, 1240001 (2012).
doi:10.1142/S0129626412400014
- G. Palla, P. Pollner and T. Vicsek, Rotated multifractal network generator, *J. Stat. Mech.* (2011) P02003.
doi:10.1088/1742-5468/2011/02/P02003
- P. Pollner, G. Palla and T. Vicsek, Clustering of tag-induced subgraphs in complex networks, *Physica A* **389**, 5887-5894 (2010).
doi:10.1016/j.physa.2010.09.012
- G. Palla, L. Lovász and T. Vicsek, Multifractal network generator, *PNAS* **107**, 7640-7645 (2010).
doi:10.1073/pnas.0912983107
- K. A. Zweig, G. Palla and T. Vicsek, What makes a phase transition? Analysis of the random satisfiability problem, *Physica A* **389**, 1501-1511 (2010).
doi:10.1016/j.physa.2009.12.051
- G. Palla, T. Vicsek, A.-L. Barabási, Statistical Properties of Community Dynamics in Large Social Networks, *International Journal of Agent Technologies & Systems* **1**(4), 1-16 (2009)
- G. Palla, I. J. Farkas, P. Pollner, I. Derényi and T. Vicsek, Fundamental statistical features and self-similar properties of tagged networks, *New Journal of Physics* **10**, 123026 (2008).
doi:10.1088/1367-2630/10/12/123026
- P. Pollner, G. Palla, D. Ábel, A. Vicsek, I. J. Farkas, I. Derényi and T. Vicsek, Centrality properties of directed module members in social networks, *Physica A: Statistical Mechanics and its Applications* **387**, (Issues 19-20), page: 4959-4966 (2008).
doi:10.1016/j.physa.2008.04.025
- G. Palla, T. Vicsek and A.-L. Barabási, Community dynamics in social networks, *Fluctuation and Noise Letters* **7**, (Issue 3), page: L273-L287 (2007).
doi:10.1142/S0219477507003933
- G. Palla, I. J. Farkas, P. Pollner, I. Derényi and T. Vicsek, Directed network modules, *New Journal of Physics* **9**, 186 (2007).
doi:10.1088/1367-2630/9/6/186
- I. J. Farkas, D. Ábel, G. Palla and T. Vicsek, Weighted network modules, *New Journal of Physics* **9**, 180 (2007).
doi:10.1088/1367-2630/9/6/180
- G. Palla, A.-L. Barabási and T. Vicsek, Quantifying social group evolution, *Nature* **446**, 664-667 (2007).
doi:10.1038/nature05670

- G. Palla, and G. Vattay, Spectral transitions in networks, *New Journal of Physics* **8**, 307 (2006).
doi:10.1088/1367-2630/8/12/307
- G. Palla, I. Derényi, and T. Vicsek, The critical point of k-clique percolation in the Erdős-Rényi graph, *J. Stat. Phys.* **128**, 219-227 (2007).
doi:10.1007/s10955-006-9184-x
- B. Adamcsek, G. Palla, I. J. Farkas, I. Derényi and T. Vicsek, CFinder: Locating cliques and overlapping modules in biological networks, *Bionformatics* **22**, 1021 (2006).
doi:10.1093/bioinformatics/btl039
- P. Pollner, G. Palla, and T. Vicsek, Preferential attachment of communities: The same principle, but a higher level, *Europhys. Lett.* **73**, 478 (2006).
doi:10.1209/epl/i2005-10414-6
- G. Palla, I. Derényi, I. Farkas, and T. Vicsek, Uncovering the overlapping community structure of complex networks in nature and society, *Nature* **435**, 814-818 (2005).
doi:10.1038/nature03607
- I. Derényi, G. Palla, and T. Vicsek, Clique percolation in random networks, *Phys. Rev. Lett.* **94**, 160202 (2005).
doi:10.1103/PhysRevLett.94.160202
- B. Kocsis, G. Palla, and J. Cserti, Quantum and semiclassical study of magnetic quantum dots, *Phys. Rev. B* **71**, 075331 (2005).
doi:10.1103/PhysRevB.71.075331
- G. Palla, I. Farkas, I. Derényi, A.-L. Barabási, and T. Vicsek, Reverse engineering of linking preferences from network restructuring, *Phys. Rev. E* **70**, 046115 (2004).
doi:10.1103/PhysRevE.70.046115
- I. Farkas, I. Derényi, G. Palla, and T. Vicsek, Equilibrium statistical mechanics of network structures, *Lect. Notes Phys.* **650**, 163–187 (Springer-Verlag Berlin Heidelberg, 2004).
doi:10.1007/978-3-540-44485-5_8
- G. Palla, I. Derényi, I. Farkas, and T. Vicsek, Statistical mechanics of topological phase transitions in networks, *Phys. Rev. E* **69**, 046117 (2004).
doi:10.1103/PhysRevE.69.046117
- J. Cserti, P. Polinák, G. Palla, U. Zülicke, and C. J. Lambert, Ring-shaped Andreev billiards in quantizing magnetic fields, *Phys. Rev. B* **69**, 134514 (2004).
doi:10.1103/PhysRevB.69.134514
- I. Derényi, I. Farkas, G. Palla, and T. Vicsek, Topological phase transitions of random networks, *Physica A* **334**, 583-590 (2004).
doi:10.1016/j.physa.2003.10.083

G. Palla, G.Vattay, A. Voros, Trace formula for noise corrections to trace formulas, *Phys. Rev. E* **64**, 012104 (2001).

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G. Palla, G. Vattay and J. Cserti, Semiclassical quantization of circular billiard in homogeneous magnetic field: Berry-Tabor approach, *International Journal of Mathematics and Mathematical Sciences* **26**, Num. 5, 269 (2001).

doi:10.1155/S0161171201020129

G. Palla, G.Vattay, A. Voros, N. Sondergaard and C. P. Dettmann, Noise corrections to stochastic trace formulas, *Foundations of Physics* **31**, Number 4 641 (2001).

doi:10.1023/A:1017569010085

G. Palla, G.Vattay, A. Voros and N. Søndergaard, Asymptotics of High Order Noise Corrections, *Journal of Statistical Physics* **101**, 385 (2000).

doi:10.1023/A:1026403314340

P. Cvitanovic, C. P. Dettmann, G. Palla, G. Vattay and N. Søndergaard, Spectrum of stochastic evolution operators: Local matrix representation approach, *Phys.Rev. E* **60**, 3936 (1999).

doi:10.1103/PhysRevE.60.3936

G. Vattay, J. Cserti, G. Palla and G. Szálka, Diffraction in the Semiclassical Description of Mesoscopic Devices, *Chaos, Solitons & Fractals* **8**, 1031 (1997).

doi:10.1016/S0960-0779(97)00007-6

BOOK CHAPTERS

G. Palla and T. Vicsek, Statistical Properties of Social Group Evolution, *Developments in Intelligent Agent Technologies and Multi-agent Systems: Concepts and Applications*, chapter 3, p. 38-56, ed.: G. Trajkovski, (ISBN13: 9781609601713, ISBN10: 1609601718, EISBN13: 9781609601737, Information Science Reference, New York 2011).

doi:10.4018/978-1-60960-171-3.ch003

G. Palla, D. Ábel, I. J. Farkas, P. Pollner, I. Derényi and T. Vicsek, k-clique Percolation and Clustering, *Handbook of Large-scale Random Networks*, chapter 9, p.369-408, ed.: B. Bollobás, R. Kozma, D. Miklós. (ISBN: 978-3-540-69394-9, Springer 2009).

doi:10.1007/978-3-540-69395-6_9

G. Palla, P. Pollner, A.-L. Barabási and T. Vicsek, Social Group Dynamics in Networks, *Adaptive Networks*, chapter 2, p. 11-38, ed.: T. Gross, H. Sayama (ISBN: 978-3-642-01283-9, Springer Berlin/Heidelberg 2009).

doi:10.1007/978-3-642-01284-6_2

- PROCEEDINGS G. Palla, P. Pollner, T. Vicsek, Rotated multifractal network generator, *Proc. of ECCS11*, page 159 (2011)
- P. Pollner, G. Palla, K. Orosz, T. Vicsek, Correlations between tag statistics and network topology, *Proc. of ECCS11*, page 13 (2011)
- G. Palla, P. Pollner, T. Vicsek, Rotated multifractal network generator, *Proc. of SigmaPhi2011*, page 118 (2011)
- G. Palla, I. J. Farkas, P. Pollner I. Derényi and T. Vicsek, Tag-statistics in complex networks, *Proc. of ECCS09*, p44 (2009)
- A. Barta, G. Palla, P. Pollner and T. Vicsek, Online clustering with CFinder, *Proc. of ECCS09*, p51 (2009)
- G. Palla, A.-L. Barabási and T. Vicsek, Social group dynamics in networks, *Proc. of SigmaPhi2008*, page 86 (2008)
- G. Palla, A.-L. Barabási and T. Vicsek, Community dynamics in social networks, *Verhandlungen der Physikalischen Gesellschaft*, **1/2008**, page 787 (2008) (Proc. of the 72nd Annual Meeting of the DPG, ISSN 0420-0195)
- G. Palla, A.-L. Barabási and T. Vicsek, Community dynamics in social networks, *Proc. of SPIE* Vol. **6601**, 660106 (2007)
- G. Palla, CFinder: Locating Cliques and Overlapping Modules in Biological Networks, *Proc. of the 5th European Conference on Computational Biology*, page 47 (2007)
- G. Palla, I. Derényi, I. Farkas and T. Vicsek, Uncovering the overlapping modular structure of protein interaction networks, *FEBS Journal* Vol.**272** Issue s1, page 434 (2005)

PAPERS IN
HUNGARIAN

- Palla G. és Kertész J., Szociofizika: humán kapcsolatok hálózata nagy skálán, *Fizikai Szemle* **2008/6**. 217 (2008).
- Palla G., Barabási A.-L. és Vicsek T., Társas kapcsolatok hálózata *Természet Világa* **139**.évf. 3.sz., 108-110 (2008).
- Palla G., Derényi I., Farkas I, Pollner P. és Vicsek T., A természet és a társadalom komplex hálózataiban található átfedő csoportosulások feltárása, *Műszaki Szemle* **42/2008** 9-18 (2008). (Az Erdélyi Magyar Műszaki Tudományos Társaság kiadványa)
- Derényi I., Farkas I., Palla G. Ás Vicsek T., Csoportosulások szociológiai, technológiai és biológiai hálózatokban, *Magyar Tudomány* **2006/11**, 1319-1324 (2006).