

Curriculum Vitae

Prof. Dr. Thomas Nowotny

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Personal Details

Name Thomas Nowotny
Birth 17 September 1971, Kassel, Germany
Current Post Professor of Informatics (since 7/2013)

Education

Nov 2010 **Postgraduate certificate of teaching in higher education (PGCertHE)**, University of Sussex

Nov 2001 **PhD (Dr. rer. nat.)** in Physics, Universität Leipzig
Dissertation: "Phase transitions and multifractal properties of random field Ising models", *Adviser:* U. Behn
Final exams in: Statistical Physics, Stochastic Processes

Jul 1998 **MSc (Diplom)** in Physics, Georg-August Universität Göttingen
Thesis: "Untersuchung geometrischer Strukturen in zellularen Netzwerken und Graphen im Hinblick auf eine Beschreibung der Feinstruktur der physikalischen Raumzeit auf der Planckskala", *Adviser:* M. Requardt
Final exams in: Theoretical Physics, Experimental Physics, Astrophysics, Probability Theory

1995 – 1996 **Participation in the Education Abroad Program**, University of California Riverside

Jul 1994 **Vordiplom (BS equivalent)** in Physics, Georg-August Universität Göttingen
Final exams in: Theoretical Physics, Experimental Physics, Chemistry, Mathematics

Career History

2/2014 – present **Director of Research and Knowledge Exchange**, School of Engineering and Informatics, University of Sussex

7/2013 – present **Professor of Informatics**, University of Sussex

8/2012 – 7/2013 **Reader**, University of Sussex

2/2012 – 8/2012 **Senior Lecturer**, University of Sussex

2011 – 2013	Distinguished Visiting Scientist (August-October 2011, December 2012 - February 2013), CSIRO Ecosystems Sciences, Canberra, Australia
2010 – 2012	Senior Research Fellow ¹ , University of Sussex
2010	Short list for a Readership at the School of Informatics, University of Edinburgh (withdrawn before interview)
2007 – 2010	RCUK Academic Fellow ²
2004 – 2007	Assistant Research Scientist ³ , Institute for Nonlinear Science, University of California San Diego (UCSD)
2002 – 2004	Postgraduate Researcher , Institute for Nonlinear Science, UCSD
1999 – 2001	PhD student in the graduate program (DFG Graduiertenkolleg) “Quantenfeldtheorie: Mathematische Struktur und ihre Anwendungen in der Elementarteilchen und Festkörperphysik”, Institute for Theoretical Physics, Universität Leipzig
1997 – 1998	Assistant , Data Processing Group, Max-Planck Institute for Fluid Dynamics, Göttingen

Prizes, Awards and Honours

2010 – 2013	Distinguished Visiting Scientist, CSIRO, Canberra, Australia
2007 – 2012	RCUK Academic Fellowship , University of Sussex
2001	Magna cum laude PhD (Dr. rer. nat.) in Physics, Universität Leipzig
1998 – 2001	PhD fellowship of the German Science Foundation (Deutsche Forschungsgemeinschaft) First class (“sehr gut”) Masters degree (Diplom) in Physics, Georg-August Universität Göttingen
1994	First class (“sehr gut”) BS degree (Vordiplom) in Physics, Georg-August Universität Göttingen Nomination for a fellowship with the Studienstiftung des deutschen Volkes
1993	“Best student” award in Theoretical Mechanics
1992	Finalist of the German National Competition in Computer Science (“Bundeswettbewerb Informatik”), Bundesministerium für Bildung und Forschung & Gesellschaft für Mathematik und Datenverarbeitung
1991	Best graduate 1991 , Engelsburg Gymnasium, Kassel (high school) Nomination for a fellowship with the Cusanus foundation

¹research series equivalent of senior lecturer/reader (associate professor)

²see <http://www.rcuk.ac.uk/acfellow/> for a description of RCUK academic fellowships

³research series equivalent to assistant professor positions, see <http://www.ucop.edu/acadadv/acadpers/apm/apm-310.pdf> for details.

Grants

- 04-2014 – 09-2015 Human Brain Project (EU FP7) “Neuromorphic Implementations of Multivariate Classification Inspired by the Olfactory System [NEUROCLASSIOS]”, GBP 85,816, **role: PI**
- 04-2014 – 09-2014 EfuturesXD (EPSRC) “Fast electronic noses through spiking neuromorphic networks”, GBP 46,346
- 09-2014 – 08-2016 Marie Curie Fellow Dr. Michael Schmuker “Biomachinelearning: Bio-inspired Machine Learning for Chemical Sensing”, GBP 170,910, **role: Scientist in Charge**
- 09-2014 – 08-2015 Royal Academy of Engineering/ The Leverhulme Trust “Enabling scientific computing with GPUs with domain specific languages and meta-compilers”, GBP 44,522, **role: PI**
- 2013 – 2014 CSIRO Flagship Collaboration Fund Project “Systematic Benchmarking of Chemical Sensory Arrays Using Feature Selection and Machine Learning”, GBP 35,539, **role: PI**
- 2013 – 2016 BBSRC research proposal “Lapses in memory: opportunities for adaptive behaviour” (PI Ildiko Kemenes), GBP 742674, **role: Co-I**
- 2012 – 2015 EPSRC grant “Green Brain - Computational Modelling of the Honeybee Brain”, collaboration with Sheffield University (PI Marshall), GBP 988,073, Sussex awarded GBP 335,477, **role: PI**
- 2011 – 2013 Distinguished Visiting Scientist Award, CSIRO Ecosystems Sciences, Canberra, Australia, 15,000 AUD, **role: PI**
- 2010 NVidia Professor partnership, Hardware donation by NVidia Corporation, estimated value GBP 3,000, **role: Co-PI** (shared with Dr. L. Berthouze)
- 2010 – 2013 BBSRC grant “Decision Making and Learning in Neuronal Networks” (PI O’Shea), GBP 1,120,045, **role: Co-I**
- 2009 Travel grant of the UK foreign office to Prof. Brian H. Smith, Arizona State University, GBP 1,700, **role: Co-PI & host**
- 2009 – 2010 EPSRC Cross-Disciplinary Feasibility Account (PI Husbands), GBP 200,000, **role: Co-I**
- 2009 Wellcome Trust “VIP support” for David Samu, GBP 4,000, **role: Co-PI**
- 2008 – 2011 BBSRC grant in the ANR-BBSRC SysBio Initiative, “Olfactory Coding in the Insect Pheromone Pathway: Models and Experiments” (PheroSys) with two French partners (PIs Rospars and Martinez), GBP 768,112, Sussex awarded GBP 467,000, **role: PI and British team coordinator**
- 2006 German Ministry of Science and Education (BMBF) “Bernstein Collaboration” grant between the University of Konstanz and the Bernstein Center Berlin (PIs Menzel and Galizia), **role: initially named co-applicant, later consulting associate**
- 2005 NSF/NIH grant RO1 NS050945, “Dynamical Principles of Neuronal Motor Microcircuits” (PI Selverston), USD 1,974,000, **role: named researcher/investigator**, participation 1.5 years at 100%, UCSD, USA
- 2003 NSF grant PHY 0414174, “Enhanced Synchronization of Neurons with Synaptic Plasticity: Its Origins and Its Role in Learning & Information Transport” (PI Abarbanel), USD 300,000, **role: named researcher/investigator**, participation 1 year at 100%, UCSD, USA

Academic Supervision

Postdoctoral Fellows

2014 –	Alan Diamond Postdoc supervisor, eFuturesXD
2013 –	Postdoc supervisor Esin Yavuz, Green Brain Project
2010 – present	Postdoc co-supervision Z. Pirger (20%), “Decision making and Learning in Neural Networks”, shared with M. O’Shea and G. Kemenes
2008 – 2011	Postdoc supervision Dr. C. L. Buckley (100%), PheroSys project, now senior postdoc at RIKEN Brain Institute, Japan
2008 – 2010	Postdoc supervision Dr. A. Zavada (100%), PheroSys project, now Erlang software architect, Massive Solutions, Ukraine
2008 – 2010	Postdoc co-supervision Dr. A. Chaffiol (20%), PheroSys project at INRA Versailles, shared with D. Martinez and J.-P. Rospars
2007	Postdoc supervision Dr. M. Schmuker (100%), visiting research fellow

PhD Students

2014 –	James Turner, with Luc Berthouze (30%), GTA scholarship
2011 – 2014	PhD supervision Thomas “Greg” Corcoran (60%) with Andy Philippides, funded by GTA fellowship; withdrawn 2014
2010 – 2011	PhD supervision Damien Drix (100%), funded by EPSRC feasibility account, left for personal reasons.
2010 – 2014	PhD supervision Dawood Parpia (85%) with G. Kemenes (15%), self-funded; withdrawn
2009 – 2012	PhD supervision David Samu (60%) with A. Seth (25%) and G. Kemenes (15%), “Module hierarchy and centralisation in the anatomy and dynamics of human cortex”, submitted September 2012, within 3 years , funded by GTA fellowship
2009 – present	PhD supervision Michael Crossley (25 %) with G Kemenes (50 %) and K. Staras (25 %), funded by the BBSRC
2008 – 2012	PhD supervision Lucas Wilkins (30%) with D. Osorio (70%), “The Geometry of Animal Colour Vision”, viva passed July 2012, submitted within 4 years , BBSRC funded, self-funded

MSc Students

2010	MSc supervision Damien Drix, “Compact storage of sequences in scalable spiking neural networks”
2008	MSc supervision Neil Mather, “3D Visualisation Software for Neural Networks”

- 2009 **MSc supervision** David Samu, “A high fidelity brain-machine interface in a hybrid system: Implementation, test and comparison of a real-time electrode-response compensation technique on a Dynamic Clamp system”
- 2009-2010 **MSc supervision** David Vardanjan, “Using STDP clustering in a biomimetic neural network for hand-written digit classification on a NVIDIA GPU”
- 2011 – 2012 **MSc supervision** Plutarco Naranjo, “A machine learning approach to geometric technical analysis using star price patterns”
- 2012 **MSc supervision** Nicholas Hockings, “The Role of Materials in Passive Dynamics, Sensation and Motor Control of the Human Hand”
- 2012 **MSc supervision** Dylan Lentini, “Equivalence of Biological and Machine Learning”

Undergraduate Students

- 2007 – present **Undergraduate project supervision** (P. Quish 2008, I. Limistiras 2009, Farrel Hayman 2010, Steven Muggerridge, Mauro Melo, Tiago de Sa Martins (2011), Philip Woods (2012))

Co-supervised PhD Students at UCSD

- 2006 – 2007 **PhD co-supervision** Leif Gibb, “Inhibition, Recurrent Excitation, and Neural Feedback in Computational Models of Sparse Bursting and Birdsong Sequencing”, UCSD (graduated 2009)
- 2006 – 2007 **PhD co-supervision** Corinne Teeter, “Characterizing the Spatial Density Functions of Neural Arbors”, UCSD (graduated 2010)
- 2002 – 2004 **PhD co-supervision** Valentin Zhitulin, “Multiple-scale dynamics in neural systems: learning, synchronization and network oscillations”, California Institute of Technology
- 2003 – 2006 **PhD co-supervision** Sachin Talathi, “Biophysical modelling of synaptic plasticity and its function in the dynamics of neuronal networks”, UCSD

Examination

- 2013 – present External examiner for the MSc “MSc in Cognitive and Computational Neuroscience”, School of Psychology, University of Sheffield

External PhD Examination

- 2012 **External PhD examiner** Ioana Sporea, University of Surrey
- 2010 **External PhD examiner** Fabiano Baroni, Universidad Autónoma de Madrid
- 2010 **Opponent (External PhD examiner)** Malin Sandström, Royal Institute of Technology (KTH), Stockholm

- 2009 **External PhD referee** Jorge Mejias, European Doctorate, University of Granada
 2008 **External PhD Examiner** Michael Forrest, University of Warwick

Internal PhD Examination

- 2008 **Internal PhD Examiner** Daniel Bush, University of Sussex
 2009 **Internal PhD Examiner** Paul Horton, University of Sussex
Internal PhD Examiner Peter Passaro, University of Sussex
 2010 **Internal PhD Examiner** Nathaniel Virgo, University of Sussex
 2011 **Internal PhD Examiner** Paul Chorley, University of Sussex

PhD Committees

- 2013 – Internak PhD committee Jack Pay
 2010 – present **External PhD committee** Angela Rouyar, INRA Versailles
 2008 – 2011 **External PhD committee** Hana Belmabrouk, INRIA Nancy
 2008 – 2011 **External PhD committee** Alexandre Grémiaux, INRA Versailles
 2008 – present **Internal PhD committees** (Saqib Khan, Lorenzo Grespan, Paul Chorley, Thomas “Greg” Corcoran, Nick Ward)

Scholarship

- 2014 – present **Associate Editor** Frontiers in Robotics and AI (section Computational Intelligence)
 2014 – present **Director** of the Organisation for Computational Neuroscience (OCNS)
 2013 – present **Member of the Steering committee of Sussex Neuroscience**
 2012 – present **Member of the Steering committee** of the UK INCF node.
 2012 – present **Member of the editorial board** of the Encyclopedia of Nanotechnology
 2011 – present **Associate editor**, Frontiers in Neuroengineering (Research Topic: “Bioinspired solutions to the challenges of chemical sensing”)
 2010 – 2013 **Member of the CNS⁴ scientific organising committee**
 2009 **Associate editor** for PLoS Computational Biology
 2008 – present **Member of the editorial board** of the Journal of Ion Channels
 2008 – present **Reviewer** for BBSRC, EPSRC, The Leverhulme Trust and the Wellcome Trust

⁴Annual meeting of the Organization for Computational Neuroscience (OCNS), the leading organisation in computational neuroscience worldwide

- 2002 – present **Referee for scientific journals** including:
 Journal of Neuroscience, Biological Cybernetics, Physical Review Letters, Physical Review E, Physics Letters A, Journal of Neurophysiology, Chemical Senses, IEEE Transactions in Circuits & Systems, Europhysics Letters, Advances in Complex Systems, European Journal of Applied Physiology, Journal of Theoretical Biology, PLoS Computational Biology, PLoS ONE, Computational Intelligence and Neuroscience, Journal of Computational Neuroscience, Journal of Automation, Mobile Robotics & Intelligent Systems, Chaos, Network: Computation in Neural Systems

Conference and Workshop Organisation

- 2012 **Organisation of the scientific programme** of the CNS*2012 annual meeting in Atlanta/Decatur, USA, ca. 350 participants
- 2012 **Organisation of** the international workshop “Examining the dynamic nature of neural representations with the olfactory system” at CNS*2012, ca. 20 participants
- 2012 **Organisation of** the 2nd CCNR workshop, University of Sussex, ca. 50 participants
- 2011 **Organisation of the scientific programme** of the CNS*2011 annual meeting in Stockholm, Sweden, ca. 600 participants
- 2010 **Organisation of** the “International Workshop on Dynamical Olfaction”, Brighton, ca. 50 participants
- 2007 **Organisation of** the 1st CCNR workshop, University of Sussex, ca. 50 participants

Teaching

General Curriculum at the University of Sussex

- 2012 – present **Convener**, Mathematical Concepts, 1st yeas undergraduate module, on average 140 students, on average 3 contact hours/week
- 2012 – present **Convener**, Mathematics and Computational Methods for Complex Systems, MSc module, on average 20 students, on average 4 contact hours/week
- 2012 **Convener**, Technical Communication Skills, 1st year undergraduate course, on average 120 students, on average 2 contact hours/week
 Summary of student evaluations: 133 students, mean response 4.01
- 2011 – 2012 **Convener**, Computational Neuroscience, MSc level, with Luc Berthouze (load 50%), typically 5-15 students, on average 2 contact hours/week

<i>Summary of student evaluations</i>	2011	2012
# students	6	9
mean response	4.06	4.04

- 2011 – present **Lecturer**, Neural Circuits, undergraduate course in Life Sciences, on average 90 students, sub-module of 2 hours contact time total
- 2010 – present **Member of the Higher Education Academy**
- 2010 **Guest lecture** “Models of insect olfaction” in “Computational Neuroscience”, MSc level
- 2009 – 2012 **Convener**, Mathematics for Computing, 1st year undergraduate course, on average 120 students, on average 3 contact hours/week

<i>Summary of student evaluations</i>	2009	2010	2011	2012
# students	114	117	109	144
mean response	3.58	3.75	3.93	3.88

- 2008 **Guest lecture** “Hybrid Computer-Brain systems (Dynamic Clamp)” in “Computational Neuroscience”, MSc level
- 2008 **Two Guest lectures** “Dynamic Clamp”, in “Advanced Techniques in Cellular and Molecular Neuroscience”, MSc level

International Teaching

- 2009 **Organiser and sole presenter** at the one week workshop/summer school “The Computational Neuroscience of Olfaction”, University of Barcelona
- Organiser and sole presenter** at the one week workshop/summer school “The Computational Neuroscience of Olfaction”, Universidad Autónoma de Madrid

Previous Teaching Experience at UCSD

- 2006 **Guest lecture** on “The sense of a database approach in computational neuroscience”, in biological sciences division class BGGN 260 “Neurodynamics”
- 2004 **Tutorial** on “Large scale neural simulations in C++” for graduate students at the Institute for Nonlinear Science
- 2003 **Guest lecture** on “Synchronisation and Plasticity”, in class BGGN 260 “Neurodynamics”

Previous teaching experience at Georg-August Universität Göttingen

- 1996 – 1997 **Teaching assistant** in the lecture “Theoretical mechanics” of Prof. H. Gönner
- 1993 – 1994 **Assistant**, Lecture notes “Theoretical mechanics” with Prof. G. C. Hegerfeldt

Department, School and University Contribution

Contributions at the University of Sussex

- 2012 – present **Member of the steering committee** of Sussex Neuroscience
- 2011 – present **Academic lead** for widening participation, Department of Informatics

- 2010 – present **Member of the steering committee** of the Centre for Computational Neuroscience and Robotics (CCNR)
- 2010 – present **Investigating officer**, School of Engineering and Informatics
- 2010 – present **Member of the committee** for the EASy/CCNR web appearance
- 2009 **Member of the Informatics committee for restructuring** the Mathematics curriculum
- 2008 – present **Member of the Aimhigher Science, Technology, Engineering and Mathematics (STEM) network** East Sussex
- 2008 – present **Named contact in the School of Informatics** for the IngenioUS outreach programme
- 2008 – 2009 **Member of the group of “scholars concerned about proposals for restructuring”**, delegate of the group at a meeting with VC Michael Farthing

Contributions at UCSD

- 2002-2007 **Network administrator and webmaster** of the Institute for Nonlinear Science (shared with two others)
- 2002 **Host of the seminar series** “Dynamics of Nervous Systems”

Contributions at Universität Leipzig

- 1999 – 2001 **Network administrator** of the Institute for Theoretical Physics (in a group of three)
- 1999 – 2001 **Student speaker of the graduate program** “Quantenfeldtheorie: Mathematische Struktur und ihre Anwendungen in der Elementarteilchen und Festkörperphysik.”
- 1999 – 2001 **Student member of the advisory board** for appointments to the Leibniz professorship.

Contributions at Georg-August Universität Göttingen

- 1997 – 1998 **Student representative** on the executive board of the Institute for Theoretical Physics.

Memberships and Networks

- 2010 – present **“Champion” of the special interest group** “Modelling and Simulation Environments” in the UK INCF (“International Neuroinformatics Coordinating Facility”) node.
- 2010 – present **Member of the Higher Education Academy**
- 2008 – present **Member of the UK Neuroinformatics Network**

2008 – present	Member of the Aimhigher Science, Technology, Engineering and Mathematics (STEM) network East Sussex
2007 – 2009	Associate member of the European Network of Excellence in Artificial Olfaction (GOSPEL)
2004 – present	Member of Society for Neuroscience
1997 – 2004	Member of European Physical Society
1997 – present	Member of the German Physical Society (“Deutsche physikalische Gesellschaft”)

Business, Enterprise and the Community

2008 – 2009	Participant in the Member of Parliament (MP) – Scientist pairing programme of the Royal Society; contacts to the local MP Dr. Desmond Turner
2008 – present	Science, Technology, Engineering and Maths (STEM) Ambassador , including numerous outreach events for school children organised at the University of Sussex
2008 – present	Submitting grant proposal with Neurorobotics , a startup company at the Sussex Innovation Centre
2007 – present	Joint EU grant proposals with g.tec (Guger Technologies), Austria

Journal Publications

1. **T. Nowotny**, M. de Bruyne, A. Z. Berna, C. G. Warr and S. C. Trowell. Drosophila olfactory receptors as classifiers for volatiles from disparate real world applications. *Bioinspir. Biomim.* 9: 046007, DOI:10.1088/1748-3182/9/4/046007
2. **T. Nowotny**. Two challenges of correct validation in pattern recognition. *Front. Robotics & AI* 1: 5, DOI: 10.3389/frobt.2014.00005
3. D. Samu, A.K. Seth, **T. Nowotny**, Influence of Wiring Cost on the Large-Scale Architecture of Human Cortical Connectivity. *PLoS Comput. Biol.* 10(4): e1003557, DOI: 10.1371/journal.pcbi.1003557
4. X.R. Wang, J.T. Lizier, **T. Nowotny**, A.Z. Berna, M. Prokopenko, S.C. Trowell. Feature Selection for Chemical Sensor Arrays Using Mutual Information. *PLoS ONE* 9(3): e89840, DOI: 10.1371/journal.pone.0089840
5. **T. Nowotny**, J.-P. Rospars, D. Martinez, S. Elbanna, S. Anton. Machine learning for automatic prediction of the quality of electrophysiological recordings. *PLoS ONE*, 10.1371/journal.pone.0080838 (2013)
6. Eduardo Serrano, **T. Nowotny**, Rafael Levi, Brian H. Smith, Ramón Huerta, Gain control network conditions in early sensory coding, *PLoS Computational Biology* in press
7. **T. Nowotny**, Jacob S. Stierle, C. Giovanni Galizia, Paul Szyszka, Data-driven honeybee antennal lobe model suggests how stimulus-onset asynchrony can aid odour segregation, *Brain Research*, in press doi:10.1016/j.brainres.2013.05.038

8. **T. Nowotny**, A. Z. Berna, R. Binions, S. Trowell. Optimal feature selection for classifying a large set of chemicals using metal oxide sensors. *Sensors and Actuators B: Chemical*, Available online 13 February 2013 doi:10.1016/j.snb.2013.01.088
9. D. Samu, V. Marra, I. Kemenes, M. Crossley, G. Kemenes, K. Staras, **T. Nowotny**. Single electrode dynamic clamp with Stdpc. *J. Neurosci. Meth.* 211(1): 11-21 doi:10.1016/j.jneumeth.2012.08.003 (2012).
10. C. A. Harris, C. L. Buckley, **T. Nowotny**, P. A. Passaro, A. K. Seth, G. Kemenes, M. O'Shea. Multi-Neuronal Refractory Period Adapts Centrally Generated Behaviour to Reward. *PLoS ONE* 7(7): e42493. doi:10.1371/journal.pone.0042493 (2012)
11. R Huerta, **T. Nowotny**, Bio-inspired solutions to the challenges of chemical sensing, *Frontiers in Neuroengineering* 5: 24, doi: 10.3389/fneng.2012.00024
12. R. Huerta, S. Vembu, J. M. Amigó, **T. Nowotny**, C. Elkan. Inhibition in Multiclass Classification. *Neural Comput. Published online.* doi:10.1162/NECO_a.00321 (2012).
13. A. Grémiaux, **T. Nowotny**, D. Martinez, P. Lucas, J.-P. Rospars. Modelling the Signal Delivered by a Population of First-Order Neurons in a Moth Olfactory System. *Brain Res.* 1434: 123-35 (2012).
14. C. L. Buckley and **T. Nowotny**. Transient Dynamics between Displaced Fixed Points: An Alternate Nonlinear Dynamical Framework for Olfaction. *Brain Res.* 1434: 62-72 (2012).
15. H. Belmabrouk, **T. Nowotny**, J.-P. Rospars, D. Martinez. Interaction of cellular and network mechanisms for efficient pheromone coding in moths, *Proc. Natl. Acad. Sci. USA* 108(49): 19790-5 (2011).
16. P. Ashwin, Ö. Karabacak, **T. Nowotny** Criteria for robustness of heteroclinic cycles in neural microcircuits, *J. Math. Neurosci.* 1: 13 (2011).
17. C. L. Buckley and **T. Nowotny**, Multi-scale model of an inhibitory network shows optimal properties near bifurcation, *Phys. Rev. Lett.* 106: 238109 (2011).
18. M. Papadopoulou, S. Cassenaer, **T. Nowotny** and G. Laurent, Normalization for Sparse Encoding of Odors by a Wide-Field Interneuron, *Science*, 332(6030):721-725 (2011).
19. **T. Nowotny**, M. K. Muezzinoglu and R. Huerta, Bio-mimetic classification on modern parallel hardware: Realizations on NVidia® CUDA™ and OpenMP™, *Int. J. Inn. Comput.* 7(7A): 3825-3838 (2011)
20. I. Kemenes, V. Marra, M. Crossley, D. Samu, K. Staras, G. Kemenes and **T. Nowotny**, Dynamic clamp with Stdpc software *Nature Prot.*, 6(3):405-417 (2011).
21. A. Zavada, C. L. Buckley, D. Martinez, J.-P. Rospars, **T. Nowotny**, Competition-based model of pheromone component ratio detection in the moth, *PLoS ONE*, 6(2): e16308. (2011)
22. A. Szücs, F. Berton, **T. Nowotny**, P. Sanna, W. Francesconi, Consistency and Diversity of Spike Dynamics in the Neurons of Bed Nucleus of Stria Terminalis of the Rat: A Dynamic Clamp Study. *PLoS ONE* 5(8): e11920 (2010)
23. R. Huerta and **T. Nowotny**, Fast and Robust Learning by Reinforcement Signals: Explorations in the Insect Brain *Neural Comput* 21(8), 2123-2151 (2009)
24. **T. Nowotny**, R. Levi and A. I. Selverston Probing the Dynamics of Identified Neurons with a Data-Driven Modeling Approach, *PLoS ONE* 3(7), e2627 (2008)

25. **T. Nowotny**, R. Huerta, and M. I. Rabinovich, Neuronal synchrony: Peculiarity and generality, *Chaos* 18, 037119 (2008).
26. M. V. Ivanchenko, **T. Nowotny**, A. I. Selverston and M. I. Rabinovich, Pacemaker and Network Mechanisms of Rhythm Generation: Co-operation and Competition, *J Theor Biol* 3(7), 452-461 (2008)
27. **T. Nowotny**, A. Szücs, R. Levi, and A. I. Selverston, Models wagging the dog: Are circuits constructed with disparate parameters? *Neural Comput* 19, 1985-2003 (2007)
28. **T. Nowotny** and M. I. Rabinovich, Dynamical origin of independent spiking and bursting activity in neural microcircuits, *Phys Rev Lett* 98, 128106 (2007).
29. **T. Nowotny** and M. Requardt, Emergent Properties in Structurally Dynamic Disordered Cellular Networks, *J Cell Automata* 2(4), 273-289 (2007).
30. J. S. Haas, **T. Nowotny** and H. D. I. Abarbanel, Spike-timing dependent plasticity of inhibitory synapses in the entorhinal cortex, *J Neurophysiol* 96(6), 3305-3313 (2006).
31. **T. Nowotny**, A. Szücs, R. D. Pinto, and A. I. Selverston, StpC: A modern Dynamic Clamp, *J Neurosci Meth* 158(2), 287-299 (2006).
32. **T. Nowotny**, R. Huerta, H. D. I. Abarbanel, and M. I. Rabinovich, Self-organization in the olfactory system: One shot odor recognition in insects, *Biol Cybern* 93(6), 436-446 (2005).
33. R. Huerta, **T. Nowotny**, M. García-Sánchez, H. D. I. Abarbanel and M. I. Rabinovich, Learning classification in the olfactory system of insects, *Neural Comput* 16(8), 1601-1640 (2004).
34. **T. Nowotny** and R. Huerta, Explaining synchrony in feedforward networks: Are McCulloch-Pitts neurons good enough? *Biol Cybern* 89(4), 237-241 (2003).
35. **T. Nowotny**, V. P. Zhigulin, A. I. Selverston, H. D. I. Abarbanel and M. I. Rabinovich, Enhancement of synchronization in a hybrid neural circuit by spike timing dependent plasticity, *J Neurosci* 23(30), 9776-9785 (2003).
36. **T. Nowotny**, M. I. Rabinovich, R. Huerta and H. D. I. Abarbanel, Decoding temporal information through slow lateral excitation in the olfactory system of insects, *J Comput Neurosci* 15, 271-281 (2003).
37. **T. Nowotny**, M. I. Rabinovich and H. D. I. Abarbanel, Spatial representation of temporal information through spike timing dependent plasticity, *Phys Rev E* 68, 011908 (2003).
38. **T. Nowotny**, H. Patzlaff and U. Behn, Phase diagram of the random field Ising model on the Bethe lattice, *Phys Rev E* 65, 016127 (2002).
39. **T. Nowotny** and U. Behn, Convolution of multifractals and the local magnetization in a random field Ising chain, *J Phys A* 34, 8057-8079 (2001).
40. **T. Nowotny**, H. Patzlaff and U. Behn, Orbits and phase transitions in the multifractal spectrum, *J Phys A* 34, 1-23 (2001).
41. **T. Nowotny** and M. Requardt, Pregeometric Concepts on Graphs and Cellular Networks as Possible Models of Space-Time at the Planck-Scale, *Chaos Soliton Fract* 10, 469-481 (1999).
42. **T. Nowotny** and M. Requardt, Dimension Theory of Graphs and Networks, *J Phys A* 31, 2447-2463 (1998).

Theses and Book Chapters

43. **T. Nowotny**, V Marra, Patch Clamp Technique, Encyclopedia of Computational Neuroscience, 1-4, doi: 10.1007/978-1-4614-7320-6_133-3
44. **T. Nowotny** and P. Varona, Dynamic Clamp (2012) *Encyclopedia of Nanotechnology*, Bhushan, Bharat (Ed.), Part 5, Springer, pp. 613-621 (2012), doi: 10.1007/978-90-481-9751-4_223.
45. **T. Nowotny** and M. I. Rabinovich, Pacemaker and Network Mechanisms of Neural Rhythm Generation, in "Modern Pacemakers - Present and Future", InTech, Vienna, pp. 405-425 (2011).
46. **T. Nowotny**, "Sloppy engineering" and the olfactory system of insects, in *Biologically Inspired Signal Processing for Chemical Sensing*, Marco, Santiago; Gutiérrez, Agustín (Eds.) Studies in Computational Intelligence, Vol. 188, pp. 3-32, Springer (2009).
47. **T. Nowotny**, Phase transitions and multifractal properties of random field Ising models, *PhD Dissertation*, Universität Leipzig, 132 pages (2001).
48. **T. Nowotny**, Untersuchung geometrischer Strukturen in zellularen Netzwerken und Graphen im Hinblick auf eine Beschreibung der Feinstruktur der physikalischen Raumzeit auf der Planckskala, *Diplomarbeit*, Georg-August Universität Göttingen, 116 pages (1998).

Reviewed Conference Papers

49. **T. Nowotny**, R. Huerta. On the Equivalence of Hebbian Learning and the SVM Formalism, CISS, Princeton (2012).
50. **T. Nowotny**, A. Berna, R. Binions, S. Trowell. Optimal Feature Selection for Classifying a Large Set of Chemicals Using Metal Oxide Sensors. IMCS Conference, Nürnberg (2012).
51. **T. Nowotny**, Parallel Implementation of a Spiking Neuronal Network Model of Unsupervised Olfactory Learning on NVidia® CUDA™, WCCI (IJCNN) Barcelona (2010).
52. M. K. Muezzinoglu, **T. Nowotny**, R. Huerta, Artificial Olfactory Brain for Mixture Identification, Neural Information Processing Systems Conference (NIPS) (2008).

Software Packages

53. **T. Nowotny**(2011) GeNN (GPU enhanced neuronal networks): Framework for code-generation based neuronal network simulations in NVIDIA® CUDA™, <https://github.com/genn-team/genn>
54. **T. Nowotny**, N. Mather (2005) NeurAnim: Animation software for large scale neuronal network simulations , <http://sourceforge.net/projects/neuranim/>
55. **T. Nowotny**, D. Samu, et al. (2003) StdpC (Spike timing dependent plasticity Clamp): Dynamic clamp software, <http://sourceforge.net/projects/stdpc/>

Invited Keynotes and Invited Workshop Presentations

1. **T. Nowotny**, C. G. Galizia, P. Szyszka. Coding of temporally incoherent odour mixtures in the antennal lobe of honeybees. Neural Coding Workshop, Prague, 04 September, 2012, **invitation only international workshop**
2. **T. Nowotny**, P. Szyszka, C. G. Galizia. Incoherent mixture coding in the honeybee antennal lobe. CNS workshop on dynamics in olfaction, Atlanta-Decatur, 26 July, 2012, **invited international workshop presentation**
3. **T. Nowotny**. Central patterns generation with heteroclinic orbits. CNS workshop on pattern generation, Atlanta-Decatur, 26 July, 2012, **invited international workshop presentation**
4. **T. Nowotny**. GeNN: using code generation for GPU programming, G-node Workshop on GPU Computing, Munich, 11 April, 2012, **invited keynote**.
5. **T. Nowotny** The Feature Selection Problem for Artificial Noses, 2nd Australasian workshop on computation in cyber-physical systems, Sydney (2011), **invited keynote**
6. **T. Nowotny**, Winnerless competition in a network of Hodgkin-Huxley neurons, "Living Nonlinear Dynamics" birthday symposium for Mikhail I. Rabinovich, San Diego (2011), **invitation only international workshop**
7. **T. Nowotny** Ratio Coding and Dynamic Range: Lessons from the Moth Pheromone System. Workshop on Bioinspired computation for chemical sensing, Barcelona, **invited international workshop presentation** (2011)
8. A. Zavada, C. L. Buckley, **T. Nowotny**, Neural coding in the olfactory system of insects, *Neural Coding*, Limassol, Cyprus (2010), **invitation only international workshop**
9. **T. Nowotny**, The different roles of sparse activity and sparse connectivity for pattern recognition in the olfactory system of insects, *Computational Neuroscience Conference (CNS) workshop on insect olfaction*, Berlin (2009), **invited international workshop presentation**
10. **T. Nowotny**, A. Szücs, R. Levi and A. I. Selverston, Homeostasis versus neuronal variability: Models and experiments in crustaceans, *Comp Biochem Physiol A* 153A(2), S154-S155, *SEB Conference*, Glasgow (2009), **invited symposium presentation**
11. **T. Nowotny**, Learning pattern classification from the olfactory system of insects, International Workshop on Biotechnology, Skokloster, Sweden (2008), **invited international workshop presentation**
12. **T. Nowotny**, D. Martinez, J.-P. Rospars, Sensitivity, specificity and ratio coding: Riddles of the pheromone system in moths, BBSRC ISB Grantholder workshop, Nottingham (2008), **invited grant holders only**
13. **T. Nowotny**, R. Levi, A. I. Selverston, Can we build dynamically accurate conductance based models to investigate the origin of bursting? *Conference on "The Dynamical Origin of Bursting"*, Georgia State University, Atlanta (2006), **invited international workshop presentation**
14. **T. Nowotny**, Self-organization in the olfactory system? Fast odor recognition in insects, *Exploratory ESF Workshop on Insect Mushroom Bodies*, Seix (2004), **invitation only think tank, invited keynote**

15. **T. Nowotny**, V. P. Zhigulin, M. I. Rabinovich, Enhancement of Neural Synchronization by Activity Dependent Coupling, *50th Annual SIAM Conference*, Philadelphia (2002), **invited international workshop presentation**
16. **T. Nowotny**, Representation, transformation, and storage of temporal information in neuronal systems, *International Symposium on Topical Problems of Nonlinear Wave Physics*, Wolga River (2003), **invited symposium presentation**

All Conference Contributions and Abstracts

1. A Diamond, M Schmuker, AZ Berna, S Trowell, **T. Nowotny**, Classifying chemical sensor data using GPU-accelerated bio-mimetic neuronal networks based on the insect olfactory system. CNS Conference 2014, Quebec City, 28 July 2014. Poster presented by A Diamond; BMC Neuroscience 15 (Suppl 1), P77, doi:10.1186/1471-2202-15-S1-P77
2. **T. Nowotny**, AJ Cope, E Yavuz, M Stimberg, DFM Goodman, J Marshall, Kevin Gurney, SpineML and Brian 2.0 interfaces for using GPU enhanced Neuronal Networks (GeNN). CNS Conference 2014, Quebec City, 28 July 2014. Poster; BMC Neuroscience 15 (Suppl 1), P148, doi:10.1186/1471-2202-15-S1-P148
3. E Yavuz, J Turner, **T. Nowotny**, Simulating spiking neural networks on massively parallel graphical processing units using a code generation approach with GeNN. CNS Conference 2014, Quebec City, 27 July 2014. Talk presented by E Yavuz; BMC Neuroscience 15 (Suppl 1), O1, doi:10.1186/1471-2202-15-S1-O1
4. E Yavuz, **T. Nowotny**, A modelling framework for the olfactory system of the honeybee using GeNN (GPU enhanced Neuronal Network simulation environment), Flavour 2014, 3 (Suppl 1), P23, doi:10.1186/2044-7248-3-S1-P23
5. **T. Nowotny**, C Giovanni Galizia, Paul Szyszka, Stimulus-onset asynchrony can aid odor segregation. Flavour 2014, 3 (Suppl 1):P12, doi:10.1186/2044-7248-3-S1-P12
6. A. Cope, C. Sabo, E. Yavuz, E. Vasiliki, K. Gurney, **T. Nowotny**, J. A. Marshall. Computational modelling approach to understanding honeybee vision and cognition. 17th Congress of the International Union for the Study of Social Insects (IUSSI), 13-18 July 2014, Cairns, Australia, <http://hdl.handle.net/2123/10859>
7. **T. Nowotny**, Marien de Bruyne, Amalia Z. Berna, Coral G. Warr, Stephen C. Trowell. Olfactory detection and discrimination: Engineering lessons from an insect. Australian Entomological Society Conference 2014, 30 Sept 2014, Canberra, Australia. Talk given by Stephen Trowell
8. Amalia Z. Berna, Nadja K.L. Wiziack, Florence Bravo, **T. Nowotny**, Ben Padovan, Stephen Trowell. Development and testing of a patient breath simulator using electronic nose and thermal desorption unit. Breath Summit, Nuernberg (9-12 June). Talk given by Amalia Berna
9. **T. Nowotny**, Stephen Trowell, Marien de Bruyne. Benchmarking Drosophila receptor neurons for technical applications. Poster at the Göttingen Neuroscience Conference (13 Mar 2013)
10. **T. Nowotny**, C. G. Galizia, P. Szyszka. Coding of temporally incoherent odour mixtures in the antennal lobe of honeybees. Neural Coding Workshop, Prague, 04 September, 2012, invited

11. **T. Nowotny**. Central patterns generation with heteroclinic orbits. CNS workshop on pattern generation, Atlanta-Decatur, 26 July, 2012, invited
12. **T. Nowotny**, P. Szyszka, C. G. Galizia. Incoherent mixture coding in the honeybee antennal lobe. CNS workshop on dynamics in olfaction, Atlanta-Decatur, 26 July, 2012, invited
13. **T. Nowotny**, S. Trowell, M. de Bruyne. Benchmarking Drosophila receptor neurons for technical applications. CNS*2012, Atlanta-Decatur, 24 July, 2012, BMC Neuroscience 2012, 13(Suppl 1):P155 (16 July 2012), *peer reviewed*
14. **T. Nowotny**, A. Berna, R. Binions, S. Trowell. Optimal Feature Selection for Classifying a Large Set of Chemicals Using Metal Oxide Sensors, IMCS conference, Nürnberg, 21 May, 2012, *peer reviewed*
15. **T. Nowotny**. GeNN: using code generation for GPU programming, G-node Workshop on GPU Computing, Munich, 11 April, 2012, invited keynote
16. **T. Nowotny**. GPU enhanced neuronal networks (GeNN): Why use code generation for programming GPUs? INCF Conference, Edinburgh, 27 March, 2012
17. P. Szyszka, J. Stierle, S. Biergans, **T. Nowotny**, C. G. Galizia. Honeybee neurons use millisecond time-differences in stimulus coherence for odor-object segregation. BC11 : Computational Neuroscience & Neurotechnology Bernstein Conference & Neurex Annual Meeting 2011, Freiburg, Germany, 4-6 Oct, 2011
18. D. Drix, **T. Nowotny**. Optimisation of stimulation patterns for specific questions in electrophysiology experiments: a Python framework, Python in Neuroscience Conference, Paris (2011)
19. F. Baroni, **T. Nowotny**. The effect of intrinsic subthreshold oscillations on the spontaneous dynamics of a ring network with distance-dependent delays, CNS, Stockholm (2011), BMC Neuroscience 2011, 12(Suppl 1):P236 (18 July 2011), *peer reviewed*
20. T. Corcoran, A. Philippides, **T. Nowotny**. Coarse-grained statistics for attributing criticality to heterogeneous neural networks, CNS, Stockholm (2011), BMC Neuroscience 2011, 12(Suppl 1):P235 (18 July 2011), *peer reviewed*
21. C. L. Buckley, **T. Nowotny**. Transient Dynamics between Displaced Fixed Points: An Alternate Nonlinear Dynamical Framework for Olfaction, CNS, Stockholm (2011), BMC Neuroscience 2011, 12(Suppl 1):P237 (18 July 2011), *peer reviewed*
22. **T. Nowotny**. Flexible neuronal network simulation framework using code generation for NVidia CUDA. CNS, Stockholm (2011), BMC Neuroscience 2011, 12(Suppl 1):P239 (18 July 2011), *peer reviewed*
23. D. Drix, **T. Nowotny**. Dynamic Observer: Ion Channel Measurement beyond Voltage Clamp, CNS, Stockholm (2011), BMC Neuroscience 2011, 12(Suppl 1):P238 (18 July 2011), *peer reviewed*
24. C. Reveley, D. Samu, **T. Nowotny**, A. K. Seth, An iterative set-theoretic approach to extracting consistent anatomical connectivity from the CoCoMac database. *Wiring the Brain*, Powerscourt, Ireland (2011)
25. **T. Nowotny**, C. L. Buckley, A. Zavada, Ratio Coding and Dynamic Range in the Pheromone System of the Moth, Göttingen meeting of the German Neuroscience Society (2011)

26. **T. Nowotny**, Spiking neuronal network model of unsupervised olfactory learning on modern parallel hardware (GPU), *SfN annual meeting*, San Diego (2010)
27. C. L. Buckley, **T. Nowotny**, A. Chaffiol, D. Martinez and J. P. Rospars, Transient and critical “Winner takes all” dynamics in the macro-glomerular complex of the moth, *SfN annual meeting*, San Diego (2010)
28. A. Zavada, C. L. Buckley, **T. Nowotny**, Neural coding in the olfactory system of insects, *Neural Coding*, Limassol, Cyprus (2010), invited
29. C. L. Buckley, D. Martinez and J. P. Rospars, A. Chaffiol, S. Anton and **T. Nowotny**, Neural criticality and dynamic range in randy Moths, *Neural Coding*, Limassol, Cyprus (2010)
30. C. L. Buckley, **T. Nowotny**, Transient and critical “Winner takes all” dynamics in the macro-glomerular complex of the moth, *OCCAM workshop*, Oxford (2010)
31. **T. Nowotny**, A Parallel Implementation of a Biologically Realistic Spiking Neuronal Network Model of Unsupervised Olfactory Learning on Graphical Processing Units. *OCCAM workshop*, Oxford (2010)
32. C. L. Buckley, D. Martinez, J.-P. Rospars, **T. Nowotny**, Transient ‘winner takes all’ dynamics in the pheromone system of the moth, *SfN Annual Meeting*, Chicago (2009)
33. C. L. Buckley, **T. Nowotny**, Extending the Critical Brain Hypothesis to Rate Dynamics: A Case Study of the Antennal Lobe of the Moth, *European Conference of Artificial Life (ECAL)*, Budapest (2009), *peer reviewed*
34. **T. Nowotny**, M. K. Muezzinoglu, R. Huerta, Feasibility of biomimetic classification on NVidia® CUDA™, *European Conference of Artificial Life (ECAL)*, Budapest (2009), *peer reviewed*
35. **T. Nowotny**, The different roles of sparse activity and sparse connectivity for pattern recognition in the olfactory system of insects, *Computational Neuroscience Conference (CNS) workshop on insect olfaction*, Berlin (2009), invited
36. **T. Nowotny**, A. Szücs, R. Levi and A. I. Selverston, Homeostasis versus neuronal variability: Models and experiments in crustaceans, *Comp Biochem Physiol A* 153A(2), S154-S155, *SEB Conference*, Glasgow (2009), invited.
37. C. L. Buckley, **T. Nowotny**, Moving beyond convergence in the pheromone system of the moth, *Computational Neuroscience Conference (CNS)*, Berlin (2009), *BMC Neuroscience* 2009, 10(Suppl 1):P187 (13 July 2009), *peer reviewed*
38. **T. Nowotny**, Divergence alone cannot guarantee stable sparse activity patterns if connections are dense, *Computational Neuroscience Conference (CNS)*, Berlin (2009), *BMC Neuroscience* 2009, 10(Suppl 1):P188 (13 July 2009), *peer reviewed*
39. **T. Nowotny**, M. K. Muezzinoglu, R. Huerta, Feasibility of biomimetic classification on NVidia® CUDA™, *International Symposium on Olfaction and Electronic Nose (ISOEN)*, Brescia (2009), *peer reviewed*
40. A. Zavada, D. Martinez, J.-P. Rospars, **T. Nowotny**, A neuronal network model for the detection of binary odour mixtures, *Computational and Systems Neuroscience Conference (Cosyne)*, Salt Lake City (2009), *peer reviewed*

41. **T. Nowotny**, R. Huerta, Can divergent connectivity generate reliable sparse activity patterns? *Computational and Systems Neuroscience Conference (Cosyne)*, Salt Lake City (2009), *peer reviewed*
42. A. Zavada, D. Martinez, J.-P. Rospars, **T. Nowotny**, A neuronal network model for the detection of binary odour mixtures, *BBSRC ISB Grantholder workshop*, Nottingham (2008)
43. **T. Nowotny**, Learning pattern classification from the olfactory system of insects, International Workshop on Biotechnology, Skokloster, Sweden (2008), invited
44. **T. Nowotny**, D. Martinez, J.-P. Rospars, Sensitivity, specificity and ratio coding: Riddles of the pheromone system in moths, BBSRC ISB Grantholder workshop, Nottingham (2008), invited
45. **T. Nowotny**, M. I. Rabinovich, Dynamical origin of independent spiking and bursting activity in neural microcircuits, *SfN Annual Meeting*, San Diego (2007)
46. **T. Nowotny**, How do we model nervous systems? Lessons from the lobster lateral pyloric (LP) cell, CCNR Workshop, University of Sussex (2007), invited
47. **T. Nowotny**, R. Levi, A. I. Selverston, Can we build dynamically accurate conductance based models to investigate the origin of bursting? *Conference on "The Dynamical Origin of Bursting"*, Georgia State University, Atlanta (2006), invited
48. J. S. Haas, **T. Nowotny**, H. D. I. Abarbanel, Spike Timing-Dependent Plasticity of Inhibitory Synapses in the Entorhinal Cortex: Mechanisms and Function, *SfN Annual Meeting*, Washington DC (2005)
49. **T. Nowotny**, R. Levi, A. I. Selverston, A dynamically faithful conductance-based neuron model of the lobster lateral pyloric neuron, *SfN Annual Meeting*, Washington DC (2005)
50. **T. Nowotny**, R. Levi, A. I. Selverston, A dynamically accurate (faithful?) conductance based neuron model of the lobster lateral pyloric neuron, *Annual STG Meeting Satellite of SfN Annual Meeting*, Washington DC (2005)
51. **T. Nowotny**, J. S. Haas, H. D. I. Abarbanel, STDP of Inhibitory Synapses in the Entorhinal Cortex: II. Implications for network function, *Computational and Systems Neuroscience Conference (Cosyne)*, Salt Lake City (2005), *peer reviewed*
52. J. S. Haas, **T. Nowotny**, H. D. I. Abarbanel, STDP of Inhibitory Synapses in the Entorhinal Cortex: I. Electrophysiology, *Computational and Systems Neuroscience Conference (Cosyne)*, Salt Lake City (2005), *peer reviewed*
53. R. Huerta, **T. Nowotny**, M. Garcia-Sanchez, H. D. I. Abarbanel, M. I. Rabinovich, Learning Discrimination and Categorization in the Insect Mushroom Body: I Statistical Analysis, *SfN Annual Meeting*, San Diego (2004)
54. **T. Nowotny**, R. Huerta, H. D. I. Abarbanel, M. I. Rabinovich, Learning Discrimination and Categorization in the Insect Mushroom Body: II Neuron Simulations, *SfN Annual Meeting*, San Diego (2004)
55. **T. Nowotny**, Self-organization in the olfactory system? Fast odor recognition in insects, *Exploratory ESF Workshop on Insect Mushroom Bodies*, Seix (2004), invited
56. **T. Nowotny** and R. Huerta, Explaining synchrony in feedforward networks: Are McCulloch-Pitts Neurons Good Enough? *Dynamical Neuroscience XII Satellite of SfN Annual Meeting*, San Diego (2004)

57. **T. Nowotny**, M. I. Rabinovich, R. Huerta, H. D. I. Abarbanel, Decoding temporal information through slow lateral excitation in the olfactory system of insects, *SfN Annual Meeting*, New Orleans (2003)
58. **T. Nowotny**, R. Huerta, M. I. Rabinovich, H. D. I. Abarbanel, Classification of odors in the olfactory system of insects, *Computational Neuroscience Conference (CNS)*, Alicante (2003), *peer reviewed*
59. **T. Nowotny**, Representation, transformation, and storage of temporal information in neuronal systems, *International Symposium on Topical Problems of Nonlinear Wave Physics*, Wolga River (2003), *invited*
60. **T. Nowotny**, R. Huerta, M. Garcia-Sanchez, M. I. Rabinovich, H. D. I. Abarbanel, Classification of odors in the olfactory system of insects, *Joint Symposium on Neural Computation*, Irvine (2003)
61. **T. Nowotny**, M. I. Rabinovich, H. D. I. Abarbanel, Sequence Learning through Spike Timing Dependent Plasticity, *SfN Annual Meeting*, Orlando (2002)
62. A. Szücs, **T. Nowotny**, V. P. Zhigulin, M. I. Rabinovich, R. Huerta, H. D. I. Abarbanel, A. I. Selverston, Enhanced Synchronization of Biological and Model Neurons through Spike Timing Dependent Plasticity, *SfN Annual Meeting*, Orlando (2002)
63. **T. Nowotny**, V. P. Zhigulin, M. I. Rabinovich, Enhancement of Neural Synchronization by Activity Dependent Coupling, *50th Annual SIAM Conference*, Philadelphia (2002), *invited*
64. **T. Nowotny**, M. I. Rabinovich, H. D. I. Abarbanel, Sequence Learning Through Spike Timing Dependent Plasticity, *Joint Symposium on Neural Computation*, Pasadena (2002)
65. **T. Nowotny**, U. Behn, Multifraktale Charakterisierung der lokalen Magnetisierung im eindimensionalen Zufallsfeld-Ising-Modell, *DPG Frühjahrstagung*, Hamburg (2001)
66. **T. Nowotny**, U. Behn, Diskrete stochastische Dynamik und Phasenübergänge in multifraktalen Spektren, *Workshop Strukturbildung*, Bad Honnef (2001)
67. **T. Nowotny**, H. Patzlaff, U. Behn, Orbits and Phase Transitions in the Multifractal Spectrum, *DPG Frühjahrstagung*, Regensburg (2000)
68. **T. Nowotny**, U. Behn, Random field Ising chain, *CompPhys00*, Leipzig (2000)
69. **T. Nowotny**, 1D random field Ising model, *Workshop on Stochastic Processes*, Oberwolfach (1999)
70. **T. Nowotny**, M. Requardt, Dimension Theory of Graphs and Networks, *DPG Frühjahrstagung*, Regensburg (1998)

Invited Talks

1. **T. Nowotny**, Computational Neuroscience. Neuroscience Away Day and inaugural meeting of Sussex Neuroscience. Brighton, 22 March, 2013
2. **T. Nowotny**, How the fine spatio-temporal structure of the odour plume may help bees to recognize odour objects. Group seminar Prof. Bowman, University of Kent, 20 March, 2013

3. **T. Nowotny**, How the fine spatio-temporal structure of the odour plume may help bees to recognize odour objects. Invited Keynote in the international IPCog workshop, Sydney, 28 February, 2013
4. **T. Nowotny**, How the fine spatio-temporal structure of the odour plume may help bees to recognize odour objects. Chemical sensing group, CSIRO Ecosystems Sciences, Canberra, 21 February, 2013
5. **T. Nowotny**, How the fine spatio-temporal structure of the odour plume may help bees to recognize odour objects. Sensory systems group seminar, Research School of Biology, Australian National University, Canberra, 14 February, 2013
6. **T. Nowotny**, Information processing in insect olfaction. Dr. de Bruyne group seminar. Monash University, Melbourne Australia, 31 January, 2013
7. **T. Nowotny**, Information processing in insect olfaction and technical chemical sensing, chemical sensing group, DSTO office Fisherman's Bend, Melbourne Australia, 30 January, 2013
8. **T. Nowotny**, Learning in animals and machines: Lessons from the olfactory system of insects. University of Lübeck, 1 June, 2012
9. **T. Nowotny**, General purpose GPU computing: Transforming your desktop into a personal super-computer, University of Birmingham, 28 February, 2012
10. **T. Nowotny**, Research interests, accomplishments and plans. School of Systems Engineering, University of Reading, 21 August 2012
11. **T. Nowotny** PheroSys Project: Olfactory coding in the insect pheromone pathway: models and experiments, ANR-BBSRC SYSBIO2007 final dissemination event Bath (2011)
12. **T. Nowotny** The Feature Selection Problem for Artificial Noses, invited Keynote, 2nd Australasian workshop on computation in cyber-physical systems, Sydney (2011)
13. **T. Nowotny** Heteroclinic orbits and Displaced Fixed Points: Dynamical Systems Views on Sequential Neuronal Activity, Institute for Neural Engineering, University of Melbourne (2011)
14. **T. Nowotny**, Flexible neuronal network simulation framework using code generation for NVidia CUDA, CARMEN consortium workshop, Newcastle (2011)
15. **T. Nowotny** Ratio Coding and Dynamic Range: Lessons from the Moth Pheromone System. Workshop on Bioinspired computation for chemical sensing, Barcelona, invited (2011)
16. **T. Nowotny**, Winnerless competition in a network of Hodgkin-Huxley neurons, "Living Nonlinear Dynamics" birthday symposium for Mikhail I. Rabinovich, San Diego (2011)
17. **T. Nowotny**, Models of Insect Olfaction, Sheffield University (2011)
18. **T. Nowotny**, Dynamic Clamp with StdpC2010, University of Köln, Germany (2010)
19. **T. Nowotny**, Models of insect olfaction, INRA Versailles, Paris (2010)
20. **T. Nowotny**, Feasibility of biomimetic algorithms on modern highly parallel GPU hardware, University of California, Riverside (2009)
21. **T. Nowotny**, Feasibility of biomimetic algorithms on modern highly parallel GPU hardware, Bio-Circuits Institute, University of California San Diego (2009)

22. **T. Nowotny**, Models of information processing in the olfactory system of insects, Arizona State University, Tempe (2009)
23. **T. Nowotny**, Heteroclinic structures in circuits of Hodgkin-Huxley neurons: The origin of independent spiking and bursting in neural microcircuits? IUPUI Indianapolis (2009)
24. **T. Nowotny**, The olfactory system of insects suggests a random kernel method for classification, IBEC Seminar, Barcelona (2009)
25. **T. Nowotny**, Parallel implementation of large (neural) networks on NVidia® CUDA™, CRG Barcelona (2009)
26. **T. Nowotny**, Modelling Insect Olfaction, Universidad Autónoma de Madrid (2009)
27. **T. Nowotny**, Pattern classification in the olfactory system of insects, University of Hertfordshire (2009)
28. **T. Nowotny**, Heteroclinic structures in small motifs of Hodgkin-Huxley neurons? Indications from a numerical study, University of Exeter (2008)
29. **T. Nowotny**, Pattern recognition in the insect olfactory pathway, The Neurosciences Institute, La Jolla, California (2008)
30. **T. Nowotny**, Learning pattern classification from the olfactory system of insects, Allergic seminar series, University of Sussex (2008)
31. **T. Nowotny**, Learning pattern classification from the olfactory system of insects, University of Surrey (2008)
32. **T. Nowotny**, Synchronization mediated by Spike-Timing dependent Plasticity, Neuroscience seminar series, University of Sussex (2007)
33. **T. Nowotny**, Information processing in olfactory networks, University of Warwick (2007)
34. **T. Nowotny**, From olfactory networks to single cell entrainment: What algorithms determine neuronal network function? UCSD (2006)
35. **T. Nowotny**, From olfactory networks to single cell entrainment: What algorithms determine neuronal network function? University of Sussex (2006)
36. **T. Nowotny**, From olfactory networks to single cell entrainment: What algorithms determine neuronal network function? Shanghai (2006)
37. **T. Nowotny**, From olfactory networks to single cell entrainment: What algorithms determine neuronal network function? Technical University of Munich (2006)
38. **T. Nowotny**, From olfactory networks to single cell entrainment: What determines large scale network function? Ludwig-Maximilians University, Munich (2006)
39. **T. Nowotny**, The challenge of building accurate phenomenological neuron models for identified cells: Insights from models of the lobster LP cell, Bernstein Center for Computational Neuroscience, Munich (2005)
40. **T. Nowotny**, The challenge of building accurate phenomenological neuron models for identified cells: Insights from models of the lobster LP cell, Max Planck Institute for Mathematics in the Sciences, Leipzig (2005)
41. **T. Nowotny**, Self-organization in the olfactory system? Rapid odor recognition in insects, University of California, Riverside (2005)
42. **T. Nowotny**, Classification of odors in the olfactory system of insects, Freie Universität Berlin (2003)

43. **T. Nowotny**, Explaining synchronization in feedforward networks: Are McCulloch-Pitts neurons good enough? Technical University of Munich (2003)
44. **T. Nowotny**, Learning classification in the olfactory system of insects, Freie Universität Berlin (2003)
45. **T. Nowotny**, Sequence learning through STDP, “Chalk Talk”, Salk Institute, La Jolla (2003)
46. **T. Nowotny**, Enhanced synchronization through spike-timing dependent plasticity, University of Toronto (2003)
47. **T. Nowotny**, Decoding temporal information by means of slow excitation in the olfactory system of insects, Max Planck Institute for Neurobiology, Munich (2002)
48. **T. Nowotny**, Decoding temporal information by means of slow excitation in the olfactory system of insects, Technical University of Munich (2002)
49. **T. Nowotny**, Decoding temporal information by means of slow excitation in the olfactory system of insects, Freie Universität Berlin (2002)
50. **T. Nowotny**, Enhanced synchronization of biological and model neurons by spike-timing dependent plasticity, Georg-August Universität Göttingen (2002)
51. **T. Nowotny**, Decoding temporal information by means of slow excitation in the olfactory system of insects, Max Planck Institute for Mathematics in the Sciences, Leipzig (2002)
52. **T. Nowotny**, Spatial representation of temporal information through spike timing dependent plasticity, Universität Leipzig (2002)