

Dr. Peter beim Graben – Curriculum Vitae

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Education

1995 – 2000. Ph.D. studies in Physics (Nonlinear Dynamics / Theoretical Physics) at the University of Potsdam (Advisors: Prof. Dr. Jürgen Kurths (Physics), Prof. Dr. Douglas Saddy (Linguistics), Prof. Dr. Arne Wunderlin (Physics, University of Stuttgart)); title: “Symbolic Dynamics of Event-Related Brain Potentials in Language Processing” (in German). Ph.D.

1987 – 1995. Studies in Physics and Philosophy at the University of Hamburg, Diploma in Theoretical Physics (Advisors: Prof. Dr. Gerhard Mack, Prof. Dr. Klaus Fredenhagen); title: “Solvable Lattice Models with a Truncated Quantum Group as Symmetry” (in German).

Professional Positions

2015, April – June. Visiting Professor at Laboratoire Lorrain de Recherche en Informatique et ses Applications (CNRS UMR 7503 LORIA), Nancy, France.

2010 – 2015. DFG Heisenberg Fellow at the Department of German Studies and Linguistics at the Humboldt-Universität zu Berlin. Associated to the Berlin Bernstein Center for Computational Neuroscience and to the Berlin School of Mind and Brain.

2013, Sep. – Oct. / 2012, Oct. – Dec. Visiting Professor at Institut National de Recherche en Informatique et en Automatique (INRIA), Research Center Grand East, Nancy, France.

2006 – 2009. Senior Research Fellow at the Department of Clinical Language Sciences, University of Reading, United Kingdom.

2000 – 2006. Research Associate in the DFG Research Unit “Conflicting Rules in Cognitive Systems” (KU 837/14-4) at the University of Potsdam.

1997 – 2000. Research Assistant at the Institute of Linguistics at the University of Potsdam. Managing EEG laboratory.

1996 – 1997. Research Assistant in the DFG Center of Excellence “Formal Models of Cognitive Complexity” (INK 12) at the University of Potsdam.

Professional Activities and Expertise

Computational Neurolinguistics: Planning, designing and conducting language-processing ERP experiments. Probabilistic and weighted grammars (Zipf's law); Stochastic Optimality Theory (stOT). Parsing with Harmonic Minimalist Grammars and dynamical systems; connectionist parsing. Dynamic semantics and pragmatic information theory. Dynamical automata and dynamic field theories. Statistical modeling of language-related brain potentials using cognitive and neural predictor models.

Computational Neuroscience: Developing the ERP analysis toolbox ERSY (Event-Related Symbolic Dynamics Evaluation Package) for improved ERP analysis; especially the Symbolic Resonance Analysis (SRA) and Recurrence Grammars. Observation models for LFP, EEG and ephaptic interactions of neural mass potentials. Neural networks and neural field theories. Emergence of macroscopic properties in neural networks.

Philosophy: Conceptual and epistemic foundations of symbolic dynamics and cognitive science (neural correlates of consciousness). Contextual emergence; Philosophy of Mind; Philosophy of Science. Intentionality. Quantum cognition.

Funding

1. DFG Heisenberg Fellowship Extension for Computational Neurolinguistics 2013.
2. DFG funding for Partition Workshop 2012 (€ 9,000).
3. EUCogIII funding for Special Session "Cognitive Architectures in Dynamic Field Theory (together with G. Schöner) at Second International Conference on Neural Field Theory, University of Reading, April 19 – 21, 2012 (€ 1,600).
4. PI of Fetzer Franklin Trust grant "Towards a New Paradigmatic Framework: Weak Quantum Theory, Generalized Entanglement and Generalized Complementarity– Explorations of Holism" 2011 – 2013 (US\$ 200,000).
5. DFG Heisenberg Fellowship for Computational Neurolinguistics 2010.
6. Co-investigator of grant "Cognitive Systems Sciences" of the EPSRC program "Bridging The Gaps" (BGT2_RDG) at University of Reading 2008 (£ 466,531).
7. Co-investigator of British Academy Small Research Grant for project "Structural and semantic licensing of negative polarity dependencies in sentence Comprehension: evidence from Basque and Spanish" 2008 (£ 6,872).

Professional Services

Acting as reviewer for *BioSystems*, *Biological Cybernetics*, *Biological Psychology*, *Bulletin of Mathematical Biology*, *Cerebral Cortex*, *Chaos and Complexity Letters*, *Chaos*, *Cognitive Neurodynamics*, *Cognitive Science*, *Cognitive Systems Research*, *Europhysics Letters*, *Europhysics Letters: Nonlinear Biomedical Physics*, *Frontiers in Computational Neuroscience*, *Frontiers in Psychology*, *Frontiers in Systems Neuroscience*, *IEEE Transactions of Biomedical Engineering*, *International Journal of Bifurcation and Chaos*, *Journal of Consciousness Studies*, *Journal of Logic, Language and Information*, *Journal of Mathematical Biology*, *Journal of Neuroscience Methods*, *Journal of Semantics*, *Journal of Theoretical Biology*, *Mind and Matter*, *Network: Computation in Neural Systems*, *Neural Networks*, *Neurocomputing*, *NeuroImage*, *Physical Review Letters*, *Physical Reviews E*, *Physics Letters A*, *PLoS Computational Biology*, *Proceedings of the*

National Academy of Sciences, Second Language Research, Theoretical Linguistics, and Topics in Cognitive Science.

Acting as reviewer for DFG Germany, Wellcome Trust UK, Marsden Fund New Zealand, KU Leuven, Belgium, Berlin School of Mind and Brain.

Editorial Activities

1. Editing theme issue “Neural Masses and Fields: Modeling Dynamics of Brain Activity” of *Frontiers in Computational Neuroscience* 2013 (together with D. Pinotsis, P. Robinson, and K. Friston).
2. Editing *Neural Fields: Theory and Applications*. Springer Mathematical Neuroscience Series (2014, together with S. Coombes, R. Potthast & J. J. Wright).
3. Editorial Board Member of *Cognitive Neurodynamics*.
4. Curator for Scholarpedia article “Contextual Emergence” (together with H. Atmanspacher).
5. Special theme issue “Brain Dynamics” of *Bulletin of Mathematical Biology* 73(2), 2011 (together with J. J. Wright).
6. Special theme issue “Language Dynamics” of *Cognitive Neurodynamics* 3(4), 2009 (together with R. Potthast).
7. Special theme issue “Brain Waves” of *Cognitive Neurodynamics*, 2(2), 2008 (together with R. Potthast and D. Saddy).
8. Edited Springer Complexity Series: Lectures in Supercomputational Neuroscience of the Fifth Summer School of the Helmholtz Institute for Supercomputational Physics on “Complex Networks in Brain Dynamics” (2008, together with C. Zhou, M. Thiel, & J. Kurths).
9. Edited special theme issue of *Chaos and Complexity Letters* 2(2/3), 2007 (together with C. Allefeld and J. Kurths).
10. Edited special theme issue “Pragmatic Information” of *Mind and Matter* 4(2), 2006 (together with H. Atmanspacher).
11. Edited special theme issue on “Cognition and Complex Brain Dynamics” of *International Journal of Bifurcation and Chaos*, 14(2), 2004 (together with D. Saddy and J. Kurths).

Teaching Activities

Teaching classes in electrophysiology of language, computational psycho-/neurolinguistics, neuroimaging, computational neuroscience/neurophysics, cognitive science, and principles of ERP measurement, statistics, and data analysis techniques:

1. Winter 2014/2015 Tutorial “EKP-Analyse mit EEGLAB”, 6th Linguistic Method Workshop, Humboldt-Universität zu Berlin.
2. Summer 2014 Seminar “Electrophysiology of Language”
3. Winter 2013/2014 Tutorial “EKP-Analyse mit EEGLAB”, 5th Linguistic Method Workshop, Humboldt-Universität zu Berlin.
4. Fall 2013 Lecture “Cognitive Aspects of Computational Linguistics”, Université de Lorraine, Nancy
5. Winter 2012/2013 Keynote Lecture “EKP-Komponenten und mentale Repräsentationen als ‘metastabile Zustände’: Ein vereinheitlichender Zugang zur Analyse und Modellierung ereigniskorrelierter Gehirnpotenziale.” 4th Linguistic Method Workshop, Humboldt-Universität zu Berlin.

6. Summer 2012 Tutorial “Neural Field Theory” at the Second International Conference on Neural Field Theory, Reading.
7. Winter 2011/2012 Seminar “Dynamical Systems and Neural Network Models in Psycholinguistics”
8. Summer 2011 Seminar “Computational Psycholinguistics”
9. Summer 2011 Lecture “Linear Algebra and the Geometry of Meaning”, together with R. Blutner. European Summer School in Logic, Language and Information (ESLLI), Ljubljana, Slovenia
10. Winter 2010/2011 Seminar “Electrophysiology of Language”
11. Summer 2010 Lecture “Dynamic Cognitive Modeling”, Summer School for Computational Linguistics, Zadar, Croatia.
12. Summer 2009 Lecture “Dynamic Cognitive Modeling”, CINN Summer School, Reading.
13. Winter 2008/2009 Lecture “Statistics for Clinical Language Scientists”
14. Winter 2007/2008 Lecture “Statistics for Clinical Language Scientists”
15. Winter 2007 Research Seminar “Mathematics in the Life Sciences II” together with R. Potthast
16. Summer 2007 Research Seminar “Mathematics in the Life Sciences I” together with R. Potthast
17. Summer 2005 Three lectures for the Fifth Summer School of the Helmholtz Institute for Supercomputational Physics on “Complex Networks in Brain Dynamics”
18. Summer 2005 Seminar: “Dynamical Models in Language Science” (computational psycholinguistics) together with J. Haack
19. Summer 2004 Blockseminar: “Critical Consideration of Particular Topics in Parapsychology” together with S. Frisch
20. Summer 2004 Seminar: “Dynamical Models in Cognitive Science” together with J. Haack
21. Winter 2003/04 Seminar: “Physical Principles of Neuroimaging Techniques”
22. Winter 2002/03 “Neurophysical Seminar“ together with J. Kurths
23. Summer 2002 Lecture: “Introduction to Neurophysics” (computational neuroscience) together with J. Kurths
24. Winter 2000/01 Blockseminar: “Introduction to ERP Technique”
25. Summer 2000 Lecture: “Introduction to Neurophysics” (computational neuroscience) together with T. Liebscher und D. Saddy
26. Winter 1997/98 Blockseminar: “Introduction to ERP Technique” together with D. Saddy

Supervision of Master Theses

1. Sabrina Gerth (Computational Linguistics 2007)
2. Sylvia Jarick (Psycholinguistics 2003)

Student Internships

1. Cordula Schwappach (Neurophysics 2014)

Organizational Activities

1. Program Committee Member for the International Workshop ‘Quantum Interaction 2015’, Filzbach, July 14 – 17, 2015.
2. Program Committee Member for the International Workshop ‘Quantum Interaction 2014’, Filzbach, June 30 – July 03, 2014.
3. Third International Conference on Neural Field Theory (together with I. Bojak, S. Coombes, B. Hasan, R. Potthast, E. Roesch, D. Saddy and K. Sloan), University of Reading, June 16 – 18, 2014.
4. Symposium “Language as a Window into the Brain and its Pathologies” (together with P. Garrard, B. Elvevåg, E. Mizraji, and J. Valle-Lisboa) at the 35th Annual Meeting of the Cognitive Science Society (CogSci2013), Humboldt-Universität zu Berlin, July 31 – August 03, 2013.
5. Program Committee Member for the International Workshop ‘Quantum Interaction 2013’, University of Leicester, July 25 – 27, 2013.
6. Program Committee Member for the 6th AISB Symposium on Computing and Philosophy, University of Exeter, April 2 – 5, 2013.
7. 14th Szklarska Poreba Workshop on the Roots of Pragmasemantics (together with M. Egg, R. Blutner and A. Benz), March 1 – 4, 2013.
8. Partition Workshop 2012 (together with H. Atmanspacher, J. Kurths and N. Wessel), Humboldt-Universität zu Berlin, September 17 – 20, 2012.
9. Second International Conference on Neural Field Theory (together with R. Potthast, S. Coombes and D. Saddy), University of Reading, April 19 – 21, 2012.
10. Special Session “Cognitive Architectures in Dynamic Field Theory (together with G. Schöner) at Second International Conference on Neural Field Theory, University of Reading, April 19 – 21, 2012.
11. 13th Szklarska Poreba Workshop on the Roots of Pragmasemantics (together with M. Egg, R. Blutner and A. Benz), February 9 – 13, 2012.
12. Tandem Workshop on Optimality in Language and Geometric Approaches to Cognition (together with A. Benz, R. Blutner and M. Krifka), ZAS Berlin, December 11 – 13, 2010.
13. International Conference Progress in Neural Field Theory (together with R. Potthast, J. J. Wright and D. Saddy), University of Reading, September 16 – 18, 2010.
14. Program Committee Member of 2nd International Conference on Cognitive Neurodynamics (ICCN), Hangzhou, China, November 15 – 19, 2009.
15. Workshop Dynamical Systems in Language, University of Reading, September 08 – 09, 2008 (together with R. Potthast, S. Nasuto, P. Grindrod, and D. Saddy).
16. Minisymposium “Brain Waves and Cognitive Neurodynamics” at Waves 2007, The 8th International Conference on Mathematical and Numerical Aspects of Waves at the University of Reading, July 23 – 27, 2007 (together with R. Potthast and D. Saddy).
17. Scientific Director of the Fifth Summer School of the Helmholtz Institute for Supercomputational Physics on “Complex Networks in Brain Dynamics” at the University of Potsdam, September 05 – 30, 2005 (together with C. Zhou and M. Thiel).
18. Tandem-Workshop Advanced Methods of Electrophysiological Signal Analysis (Part A) and Symbol Grounding? Dynamical Systems Approaches to Language (Part B) at the University of Potsdam, March 14 – 17, 2005 (together with C. Allefeld, D. Saddy, J. Kurths, A. D. Friederici und M. Schlesewsky).
19. Workshop on Analyzing and Modeling Event-related Brain Potentials – Cognitive and Neural Approaches, hold at University of Potsdam, fall 2001 (together with D. Saddy, J. Kurths, A. D. Friederici and M. Schlesewsky).

Skills and Expertise

Solid training in physics, computational neuroscience, linguistics, and mathematics. Background in neurobiology and cognitive psychology. Computer: Windows, Unix, Linux; Programming languages: C/C++, Pascal, MATLAB, Mathematica; Web administration, LaTeX, MS-Office. Experience in ERP programming, measurement and data analysis (ERTS, EEProbe, ERSY, EEGLAB). Languages: German, English.

Memberships in Professional Associations

1. Deutsche Physikalische Gesellschaft (German Physical Society)
2. EUCogIII Network
3. Cognitive Science Society
4. Society for Mind-Matter Research (Board Member)

Awards and Honors

1. DFG Heisenberg Fellowship for Cognitive Neurodynamics 2010/2013.
2. Paper award: 'beim Graben, P. & Potthast, R. (2009). Inverse problems in dynamic cognitive modeling. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 19, 015103' selected for *Virtual Journal of Biological Physics Research*, 17(7), April 1, 2009 by the American Physical Society.
3. Hermann Lotze Price 2009.
4. Paper award: 'beim Graben, P., Drenhaus, H., Brehm, E., Rhode, B., Saddy, D. & Frisch, S. (2007). Enhancing dominant modes in nonstationary time series by means of the symbolic resonance analysis. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 17, 043106' selected for *Virtual Journal of Biological Physics Research*, 14(9), November 1, 2007 by the American Physical Society.
5. Paper award: 'beim Graben, P., Frisch, S., Fink, A., Saddy, D. & Kurths, J. (2005). Topographic voltage and coherence mapping of brain potentials by means of the symbolic resonance analysis. *Physical Review E*, 72, 051916' selected for *Virtual Journal of Biological Physics Research* 10(10), November 15, 2005 by the American Physical Society.

Publications

Five Selected Publications

1. beim Graben, P. & Hutt, A. (2015). Detecting event-related recurrences by symbolic analysis: Applications to human language processing. *Proceedings of the Royal Society London*, A373, 20140089.
2. beim Graben, P. (2014). Order effects in dynamic semantics. *Topics in Cognitive Science* 6(1), 67 – 73.
3. beim Graben, P. & Gerth, S. (2012). Geometric representations for minimalist grammars. *Journal of Logic, Language and Information*, 21(4), 393 – 432.
4. beim Graben, P. & Drenhaus, H. (2012). Computationelle Neurolinguistik. *Zeitschrift für Germanistische Linguistik*, 40(1), 97–125.
5. beim Graben, P., Gerth, S. & Vasishth, S. (2008). Towards dynamical system models of language-related brain potentials. *Cognitive Neurodynamics*, 2(3), 229 – 255.

Papers in Referred Journals

1. Blutner, R. & beim Graben, P. (2015). Quantum cognition and bounded rationality. *Synthese*. doi:10.1007/s11229-015-0928-5.
2. Schwappach, C., Hutt, A. & beim Graben, P. (2015). Metastable dynamics in heterogeneous neural fields. *Frontiers in Systems Neuroscience*, 9, 97.
3. beim Graben, P. & Hutt, A. (2015). Detecting event-related recurrences by symbolic analysis: Applications to human language processing. *Proceedings of the Royal Society London*, A373, 20140089.
4. beim Graben, P. (2014). Contextual emergence of intentional systems. *Journal of Consciousness Studies*, 21(5-6), 75 – 96.
5. beim Graben, P. & Hutt, A. (2014). Attractor and saddle node dynamics in heterogeneous neural fields. *EPJ Nonlinear Biomedical Physics*, 2, 4.
6. beim Graben, P. (2014). Order effects in dynamic semantics. *Topics in Cognitive Science* 6(1), 67 – 73.
7. Blutner, R. & beim Graben, P. (2013). The (virtual) conceptual necessity of quantum probabilities in cognitive psychology. Comment on target article “Can quantum probability provide a new direction for cognitive modeling?” by E. M. Pothos and J. R. Busemeyer. *Behavioral and Brain Sciences* 36(3), 280 – 281.

8. beim Graben, P. & Hutt, A. (2013). Detecting recurrence domains of dynamical systems by symbolic dynamics. *Physical Review Letters* 110(15), 154101.
9. beim Graben, P., Filk, T. & Atmanspacher, H. (2013). Epistemic entanglement due to non-generating partitions of classical dynamical systems. *International Journal of Theoretical Physics*, 52(3), 723 – 734.
10. beim Graben, P. & Rodrigues, S. (2013). A biophysical observation model for field potentials of networks of leaky integrate-and-fire neurons. *Frontiers in Computational Neuroscience*, 6, 100.
11. beim Graben, P. & Gerth, S. (2012). Geometric representations for minimalist grammars. *Journal of Logic, Language and Information*, 21(4), 393 – 432.
12. beim Graben, P. & Drenhaus, H. (2012). Computationelle Neurolinguistik. *Zeitschrift für Germanistische Linguistik*, 40(1), 97–125.
13. Drenhaus, H. & beim Graben, P. (2012). Ereigniskorrelierte Potentiale (EKPs). *Zeitschrift für Germanistische Linguistik*, 40(1), 68 – 96.
14. Potthast, R. & beim Graben, P. (2010). Existence and properties of solutions for neural field equations. *Mathematical Methods in the Applied Sciences*, 33(8), 935 – 949.
15. Potthast, R. & beim Graben, P. (2009). Inverse problems in neural field theory. *SIAM Journal on Applied Dynamical Systems*, 8(4), 1405 – 1433.
16. Gerth S. & beim Graben P. (2009). Unifying syntactic theory and sentence processing difficulty through a connectionist minimalist parser. *Cognitive Neurodynamics*, 3(4), 297 – 316.
17. Potthast, R. & beim Graben, P. (2009). Dimensional reduction for the inverse problem of neural field theory. *Frontiers in Computational Neuroscience*, 3, 17.
18. beim Graben, P., Barrett, A. & Atmanspacher, H. (2009). Stability criteria for the contextual emergence of macrostates in neural networks. *Network: Computation in Neural Systems*, 20(3), 177 – 195.
19. beim Graben, P. & Potthast, R. (2009). Inverse problems in dynamic cognitive modeling. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 19, 015103.
20. beim Graben, P., Gerth, S. & Vasisht, S. (2008). Towards dynamical system models of language-related brain potentials. *Cognitive Neurodynamics*, 2(3), 229 – 255.
21. beim Graben, P., Pinotsis, D., Saddy, D. & Potthast, R. (2008). Language processing with dynamic fields. *Cognitive Neurodynamics*, 2(2), 79 – 88.
22. beim Graben, P. & Kurths, J. (2008). Simulating global properties of electroencephalograms with minimal random neural networks. *Neurocomputing*, 71(4), 999 – 1007.

23. beim Graben, P., Drenhaus, H., Brehm, E., Rhode, B., Saddy, D. & Frisch, S. (2007). Enhancing dominant modes in nonstationary time series by means of the symbolic resonance analysis. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 17, 043106.
24. Atmanspacher, H. & beim Graben, P. (2007). Contextual emergence of mental states from neurodynamics. *Chaos and Complexity Letters*, 2(2/3), 151 – 168.
25. beim Graben, P. (2006). Pragmatic information in dynamic semantics. *Mind and Matter* 4(2), 169 – 193.
26. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2006). Diagnosis and repair of negative polarity constructions in the light of symbolic resonance analysis. *Brain and Language*, 96(3), 255 – 268.
27. beim Graben, P. & Atmanspacher, H. (2006). Complementarity in classical dynamical systems. *Foundations of Physics*, 36(2), 291 – 306.
28. beim Graben, P., Frisch, S., Fink, A., Saddy, D. & Kurths, J. (2005). Topographic voltage and coherence mapping of brain potentials by means of the symbolic resonance analysis. *Physical Review E*, 72, 051916.
29. Frisch, S. & beim Graben, P. (2005). Finding needles in haystacks: symbolic resonance analysis of event-related potentials unveils different processing demands. *Cognitive Brain Research* 24, 476 – 491.
30. beim Graben, P. (2004). Incompatible implementations of physical symbol systems. *Mind and Matter*, 2(2), 29 – 51.
31. beim Graben, P. & Frisch, S. (2004). Is it positive or negative? On determining ERP components. *IEEE Transactions on Biomedical Engineering*, 51(8), 1374 – 1382.
32. beim Graben, P., Jurish, B., Saddy, D. & Frisch, S. (2004). Language processing by dynamical systems. *International Journal of Bifurcation and Chaos*, 14(2), 599 – 621.
33. Frisch, S., beim Graben, P. & Schlesewsky, M. (2004). Parallelizing grammatical functions: P600 and P345 reflect different cost of reanalysis. *International Journal of Bifurcation and Chaos*, 14(2), 531 – 550.
34. beim Graben, P. & Kurths, J. (2003). Detecting subthreshold events in noisy data by symbolic dynamics. *Physical Review Letters*, 90(10), 100602.
35. beim Graben, P. (2001). Estimating and improving the signal-to-noise ratio of time series by symbolic dynamics. *Physical Review E*, 64, 051104.
36. beim Graben, P., Saddy, J. D., Schlesewsky, M. & J. Kurths (2000). Symbolic dynamics of event-related brain potentials. *Physical Review E*, 62(4), 5518 – 5541.
37. Troll, G. & beim Graben, P. (1998). Zipf's law is not a consequence of the central limit theorem. *Physical Review E*, 57(2), 1347 – 1355.

Books, Book Chapters, Manuscripts, Proceedings and Abstracts

1. Hutt, A., Hashemi, M., & beim Graben, P. (2015). How to render neural fields more realistic. In: Bhattacharya, B. S. & Chowdhury, F. N. (Eds.) *Validating Neuro-Computational Models of Neurological and Psychiatric Disorders*, pp. 141 – 159. Berlin: Springer.
2. Carmantini, G. S., beim Graben, P., Desroches, M., & Rodrigues, S. (2015). Turing computation with recurrent artificial neural networks. *CoCo@NIPS 2015: Cognitive Computation: Integrating Neural and Symbolic Approaches*. arXiv:1511.01427.
3. Atmanspacher, H. & beim Graben, P. (2015). Complementary observables and non-Boolean logic outside quantum physics. arXiv:1510.03325.
4. beim Graben, P., Sellers, K. K., Fröhlich, F. & Hutt, A. (2015). Optimal estimation of recurrence structures from time series. arXiv:1509.09284.
5. Blutner, R. & beim Graben, P. (2014). Descriptive and foundational aspects of quantum cognition. arxiv:1410.3961.
6. beim Graben, P. & Potthast, R. (2014). Universal neural field computation. In: Coombes, S., beim Graben, P., Potthast, R., & Wright, J. J. (Eds.) *Neural Fields: Theory and Applications*, pp. 299 – 318. Berlin: Springer.
7. beim Graben, P. & Rodrigues, S. (2014). On the electrodynamics of neural networks. In: Coombes, S., beim Graben, P., Potthast, R., & Wright, J. J. (Eds.) *Neural Fields: Theory and Applications*, pp. 269 – 296. Berlin: Springer.
8. Coombes, S., beim Graben, P. & Potthast, R. (2014). Tutorial on neural field theory. In: Coombes, S., beim Graben, P., Potthast, R., & Wright, J. J. (Eds.) *Neural Fields: Theory and Applications*, pp. 1 – 43. Berlin: Springer.
9. Coombes, S., beim Graben, P., Potthast, R., & Wright, J. J. (Eds.) (2014). *Neural Fields: Theory and Applications*. Berlin: Springer.
10. Blutner, R. & beim Graben, P. (2013). Dynamic semantics and the geometry of meaning. In: Aloni, M., Franke, M., & Roelofsen, F. (Eds.) *The Dynamic, Inquisitive, and Visionary Life of ϕ , $?\phi$, and $\diamond\phi$: A Festschrift for Jeroen Groenendijk, Martin Stokhof, and Frank Veltman*, pp. 48 – 54. <http://www.ilc.uva.nl/Festschrift-JMF/>
11. beim Graben, P. & Potthast, R. (2012). A dynamic field account to language-related brain potentials. In: M. Rabinovich, K. Friston, and P. Varona: *Principles of Brain Dynamics: Global State Interactions*, pp. 93 – 112. Cambridge (MA): MIT Press.
12. beim Graben, P. & Potthast, R. (2012). Implementing Turing Machines in dynamic field architectures. *Proceedings of AISB12 World Congress 2012 - Alan Turing 2012*. arXiv:1204.5462v2.
13. Atmanspacher, H., beim Graben, P. & Filk, T. (2011). Can classical epistemic states be entangled? In: D. Song et al. (Eds.) *Quantum Interaction: Proceedings of the Third*

Quantum Interaction Symposium – QI2011, Springer Lecture Notes in Computer Science 7052, pp. 105 – 115. Berlin: Springer.

14. beim Graben, P. (2011). Naphtas Visionen. Perspektivität in der Naturwissenschaft. In: M. Knaup, T. Müller & P. Spät (Eds.) *Post-Physikalismus*, pp. 122 – 141. Freiburg: Karl-Alber.
15. Gerth, S. & beim Graben, P. (2009). Unifying syntactic theory and sentence processing difficulty through a connectionist minimalist parser. In: A. Howes, D. Peebles, R. Cooper (Eds.), *Proceedings of the 9th International Conference on Computational Modeling (ICCM2009)*, Manchester, UK.
16. Gerth, S., beim Graben, P. & Vasishth, S. (2009). Tensor product models for language-related brain potentials. *Journal of Cognitive Neuroscience*, Supplement, 121.
17. beim Graben, P., Drenhaus, H. & Frisch, S. (2009). Enhancing dominant modes in event-related brain potentials by means of the symbolic resonance analysis. *Journal of Cognitive Neuroscience*, Supplement, 203.
18. beim Graben, P. & Atmanspacher, H. (2009). Extending the philosophical significance of the idea of complementarity. In: H. Atmanspacher & H. Primas (Eds.), *Recasting Reality*, pp. 99 – 113. Berlin: Springer.
19. beim Graben, P. (2008). Quantum representation theory for nonlinear dynamical automata. In: R. Wang, F. Gu, & E. Shen (Eds.), *Advances in Cognitive Neurodynamics – Proceedings of the International Conference on Cognitive Neurodynamics, ICCN 2007*, pp. 469 – 473. Berlin: Springer.
20. beim Graben, P., Zhou, C., Thiel, M. & Kurths, J. (Eds.). (2008). *Lectures in Supercomputational Neuroscience: Dynamics in Complex Brain Networks*. Berlin: Springer.
21. beim Graben, P. (2008). Foundations of neurophysics. In: P. beim Graben, C. Zhou, M. Thiel, & J. Kurths (Eds.), *Lectures in Supercomputational Neuroscience: Dynamics in Complex Brain Networks*, pp. 3 – 46. Berlin: Springer.
22. beim Graben, P., Liebscher, T. & Kurths, J. (2008). Neural and cognitive modeling with networks of leaky integrator units. In: P. beim Graben, C. Zhou, M. Thiel, & J. Kurths (Eds.), *Lectures in Supercomputational Neuroscience: Dynamics in Complex Brain Networks*, pp. 195 – 223. Berlin: Springer.
23. beim Graben, P., Gerth, S., Saddy, D. & Potthast, R. (2007). Fock space representations in neural field theories. In: N. Biggs et al. (Eds.), *Proceedings of Waves 2007. The 8th International Conference on Mathematical and Numerical Aspects of Waves*, pp. 120 – 122, Dept. of Mathematics, University of Reading.
24. beim Graben, P. & Frisch, S. & Drenhaus, H. (2006). Evidence for nonlinear dynamics during sentence processing. *Journal of Cognitive Neuroscience*, Supplement, 128.
25. Drenhaus, H., beim Graben, P. & Frisch, S. (2006). Not all but some ERP results on the scalar expressions 'some' and 'all'. *Journal of Cognitive Neuroscience*, Supplement, 219.

26. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2005). On the processing of negative polarity constructions revealed by the symbolic resonance analysis. *Journal of Cognitive Neuroscience*, Supplement, 93.
27. beim Graben, P. (2005). Symbolic resonance analysis of event-related potentials distinguishes different physiological processes. *Journal of Cognitive Neuroscience*, Supplement, 31.
28. Saddy, D., beim Graben, P., Drenhaus, H. & Frisch, S. (2004). Distinguishing process from content in language processing: a new answer to an old question. In: Boccaletti, S., Gluckman, B., Kurths, J., Pecora, L. M., Meucci, R., & Yordanov, O. (Eds.), *Proc. 8th Experimental Chaos Conference (ECC)*, pp. 94 – 105. Melville (NY): American Institute of Physics.
29. beim Graben, P. & Frisch, S. (2004). Symbolic resonance analysis of event-related potentials unveils different cognitive processing demands. *Evoked Potentials International Conference XIV*, pp. 92 – 93. Leipzig: Leipziger Universitätsverlag.
30. beim Graben, P. & Frisch, S. (2003). Determining the polarity of ERP components by symbolic dynamics. *Journal of Cognitive Neuroscience*, Supplement, 184.
31. beim Graben, P., Saddy, J. D. & Frisch, S. (2002). Using stochastic resonance for analyzing event-related brain potentials. *Journal of Cognitive Neuroscience*, Supplement, 63.
32. Saddy, J. D. & beim Graben, P. (2002). Measuring the neural dynamics of language comprehension processes. In: Witruk, E., Friederici, A. D. and Lachmann, T. (Eds.), *Basic Functions of Language, Reading and Reading Disorder*, pp. 41 – 60. Boston: Kluwer Academic Press.
33. beim Graben, P. (2001). *Symbolische Dynamik ereigniskorrelierter Gehirnpotentiale in der Sprachverarbeitung*, PhD Dissertation, Aachen: Shaker-Verlag (in German).
34. Frisch, S., beim Graben, P., Schlesewsky, M. & Saddy, J. D. (2001). How to turn the subject preference into an object preference: A comparison of voltage event-related brain potentials and symbolic dynamics. *Journal of Cognitive Neuroscience*, Supplement, 166.
35. beim Graben, P., Liebscher, T. & Saddy, J. D. (2000). Parsing ambiguous context-free languages by dynamical systems: Disambiguation and phase transitions in neural networks with evidence from event-related brain potentials (ERP). In: Jokinen, K., Heylen, D. and Nijholt, A. (Eds.), *Learning to behave, Vol II: Internalising Knowledge of TWLT 18*, p. 119 – 135, Enschede: University of Twente (Netherlands).
36. Saddy, J. D., beim Graben, P. & Schlesewsky, M. (1999). Measuring entropies during sentence processing. *Journal of Cognitive Neuroscience*, Supplement, 95.
37. beim Graben, P. (1995). *Lösbare Gittermodelle mit einer trunkeierten Quantengruppe als Symmetrie*. unpublished Diploma Thesis, University of Hamburg (in German).

Conference Contributions and Poster Presentations

1. Carmantini, G. S., beim Graben, P., Desroches, M., & Rodrigues, S. (2015). Turing computation with recurrent artificial neural networks. Talk to be presented at Workshop *CoCo@NIPS 2015: Cognitive Computation: Integrating Neural and Symbolic Approaches*. Twenty-ninth Annual Conference on Neural Information Processing Systems (NIPS), December 11, 2015, Montreal.
2. Fedotenkova, M., Hutt, A., beim Graben, P., & Sleigh, J. W. (2015). Distinguishing between pre- and post-incision under general anesthesia by spectral and recurrence analysis of EEG data. Poster presented at Bernstein Conference 2015, September 15 – 17, 2015, Heidelberg/Mannheim.
3. Tošić, T., beim Graben, P., Sellers, K. K., Fröhlich, F., & Hutt, A. (2015). Dynamics analysis of neural univariate time series by recurrence plots. Poster presented at the 24th Annual Computational Neuroscience Meeting (CNS*2015), July, 18 – 23, Prague.
4. beim Graben, P. & Potthast, R. (2009). Dynamic cognitive modeling of syntactic language processing. Poster presented at the 15th Annual Conference on Architectures and Mechanisms for Language Processing (AMLaP), September, 7 – 9, 2009, Barcelona.
5. Gerth S. & beim Graben P. (2009). Unifying syntactic theory and sentence processing difficulty through a connectionist minimalist parser. Poster presented at the 9th International Conference on Cognitive Modeling (ICCM), July, 24 – 26, Manchester (UK).
6. Rodrigues, S., beim Graben, P., Lilith, M., Bedard, C. & Destexhe, A. (2009). Modelling the coupling of single neuron activity to local field potentials. Poster presented at the 18th Annual Computational Neuroscience Meeting (CNS*2009), July, 18 – 23, Berlin.
7. Gerth, S. & beim Graben, P. (2009). Syntactic theory and sentence processing difficulty: A unification. Poster presented at the CUNY Conference on Human Sentence Processing 2009, March, 26 – 28, Davis (CA).
8. Drenhaus, H., beim Graben, P. & Frisch, S. (2009). When negation does make a difference: Processing German positive polarity items. Poster presented at the CUNY Conference on Human Sentence Processing 2009, March, 26 – 28, Davis (CA).
9. beim Graben, P., Drenhaus, H. & Frisch, S. (2009). Enhancing dominant modes in event-related brain potentials by means of the symbolic resonance analysis. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, 2009, March, 21 – 24, San Francisco (CA).
10. Gerth, S., beim Graben, P. & Vasishth, S. (2009). Tensor product models for language-related brain potentials. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, 2009, March, 21 – 24, San Francisco (CA).
11. beim Graben, P., Barrett, A. & Atmanspacher, H. (2008). Emergence of macrostates from partitions of neural state spaces. Poster presented at the Mathematical Neuroscience Meeting of the Royal Society of Edinburgh, March, 17 – 19, Edinburgh.

12. beim Graben, P., Gerth, S. & Vasishth, S. (2008). Modeling language-related brain potentials by dynamical recognizers. Poster presented at the CUNY Conference on Human Sentence Processing 2008, March, 13 – 15, Chapel Hill (NC).
13. Gerth, S., beim Graben, P. & Vasishth, S. (2008). Tensor product models for language-related brain potentials. Poster presented at the CUNY Conference on Human Sentence Processing 2008, March, 13 – 15, Chapel Hill (NC).
14. beim Graben, P. & Atmanspacher, H. (2006). Contextual emergence of mental states from neurodynamics. Poster presented at the 10th Association for the Scientific Study of Consciousness Conference (ASSC), June, 24, Oxford (UK).
15. beim Graben, P. & Frisch, S. & Drenhaus, H. (2006). Evidence for nonlinear dynamics during sentence processing. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, San Francisco (CA).
16. beim Graben, P. & Kurths, J. (2006). Simulating global properties of electroencephalograms with minimal random neural networks. Poster presented at the Japan-Germany Symposium on Computational Neuroscience, RIKEN Brain Science Institute, February, 01 – 04, Saitama (Japan).
17. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2005). On the interaction between pragmatics and syntax: When a negative polarity item is not licensed. Poster presented at the Conference on Experimental Pragmatics: Exploring the Cognitive Basis of Conversation (alternate paper) at the University of Cambridge, April, 14 – 16, Cambridge (UK).
18. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2005). On the processing of negative polarity constructions revealed by the symbolic resonance analysis. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, New York.
19. beim Graben, P. (2005). Symbolic resonance analysis of event-related potentials distinguishes different physiological processes. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, New York.
20. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2005). On the processing of negative polarity constructions revealed by the symbolic resonance analysis. Poster presented at the Tandem-Workshop “Advanced Methods of Electrophysiological Signal Analysis (Part A) and Symbol Grounding? Dynamical Systems Approaches to Language (Part B)” at the University of Potsdam, March, 14 – 17.
21. beim Graben, P. & Frisch, S. (2004). Symbolic resonance analysis of event-related potentials unveils different cognitive processing demands. Poster presented at the XIVth Evoked Potentials International Conference (EPIC), March 28 – 31, Leipzig.
22. beim Graben, P., Jurish, B., Saddy, J. D. & Frisch, S. (2003). Modeling language processing ERPs by dynamical systems. Poster presented at the Monte Verita Herbstakademie, October 18 – 20, Ascona (Switzerland).

23. beim Graben, P. & Frisch, S. (2003). Determining the polarity of ERP components by symbolic dynamics. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, New York.
24. beim Graben, P., Saddy, J. D. & Frisch, S. (2002). Using stochastic resonance for analyzing event-related brain potentials. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, San Francisco.
25. beim Graben, P., Saddy, J. D., Drenhaus, H., Frisch, S., Schlesewsky, M. & Brehm, E. (2001). Symbolic dynamics of neurophysiological data. Poster presented at the 6th Experimental Chaos Conference (ECC), July, 22 – 26, Potsdam.

Invited Talks

1. beim Graben, P. (2015). Applications of vector symbolic architectures in computational neuroscience. Talk presented at Seminarios de Investigación en Ingeniería Informática y de Telecomunicación, November, 27, Universidad Autónoma de Madrid.
2. beim Graben, P. (2015). Analyzing event-related brain potentials through recurrence grammars. Talk presented at Institute of Digital Signal Processing and System Theory, July, 24, Christian-Albrechts-Universität zu Kiel.
3. beim Graben, P. (2015). Heteroclinic dynamics in neural fields. Talk presented at Seminar on Stochastic Aspects of Neurobiological Problems, July, 17, Bernstein Center for Computational Neuroscience, Berlin.
4. beim Graben, P. (2015). Limited repair parsing in neural networks. Talk presented at Linguistik-Kolloquium Universität Bielefeld, June, 24, Bielefeld.
5. beim Graben, P. & Hutt, A. (2015). Analyzing event-related brain potentials through recurrence grammars. Keynote Lecture presented at The Sixth International Recurrence Plot Symposium, June, 17, Grenoble, France.
6. beim Graben, P. (2015). Recurrence complexity analyses of anesthetic EEG data. Talk presented at Neurosys Team INRIA/LORIA CR Nancy, May, 27, Nancy, France.
7. beim Graben, P. (2015). Language processing in neural networks: From garden paths to synthetic ERPs. Talk presented at Lectures de linguistique expérimentale, Université Paris Diderot UFR Linguistique, May, 22, Paris, France.
8. beim Graben, P. (2015). Neural and cognitive modeling with heterogeneous neural fields. Talk presented at Mnemosyne Team INRIA CR Bordeaux, January, 19, Bordeaux, France.
9. beim Graben, P. (2014). Issues in computational neurolinguistics. Talk presented at Sémagramme Team INRIA CR Nancy, December, 03, Nancy, France.
10. beim Graben, P. (2014). Competing populations in heterogeneous neural fields. Talk to be presented at Workshop Multi-scale Models, Slow-Fast Differential equations, Averaging in Ecology. École Polytechnique Fédérale de Lausanne, November 17 – 21 Lausanne, Switzerland.

11. beim Graben, P. (2014). Language processing with dynamic neural fields. Talk presented at Satellite Workshop “Approaching Cognition from the Computational Neuroscience Perspective. Are We There Yet?”, Bernstein Conference 2014, September 02 – 05, Göttingen.
12. beim Graben, P. (2014). Limited repair parsing in neural networks. Talk presented at Cornell University, May 02.
13. beim Graben, P. (2014). Complementarity in cognition. Talk presented at Toward a Science of Consciousness Conference 2014, Workshop “Quantum Cognition”, April 22, Tucson (AZ).
14. beim Graben, P. (2014). Analyzing event-related brain potentials through recurrence plot techniques. Talk presented at NETT Workshop 2014 “Dynamics of Neural Circuits”, March 19, CNR, Sesto Fiorentino (Italy).
15. beim Graben, P. (2013). Analysis and modeling of language-related brain potentials. Talk presented at Neuro-Kognitives Kolloquium, December 17, University Lübeck.
16. beim Graben, P. (2013). Analyzing and modeling event-related brain potentials through recurrence plot techniques. Talk presented at Research Colloquium Philosophy meets Cognitive Science, December 05, Ruhr University Bochum.
17. beim Graben, P. (2013). Analysis and Modeling of Event-Related Brain Potentials. Talk presented at INRIA CR Nancy, October, 29, Nancy, France.
18. beim Graben, P. & Blutner, R. (2013). Complementarity in cognition entailed by bounded rationality. Talk presented at Fechner Day 2013, October 21 – 25, Freiburg i.Br.
19. beim Graben, P. (2013). Analysis and Modeling of Event-Related Brain Potentials. Talk presented at University of Freiburg, Augenklinik, October, 22, Freiburg.
20. beim Graben, P. (2013). Complexity measures, signal-to-noise ratio and the symbolic resonance analysis in ERP analysis. Talk presented at the Workshop on Complexity Measures, July 17, University Lübeck.
21. beim Graben, P. (2013). Analysis and modeling of event-related brain potentials. Talk presented at the Mathematical Seminar of the University Lübeck, June 25, Lübeck.
22. beim Graben, P. (2013). Separating time scales of event-related brain potentials by recurrence grammars. Talk presented at the Workshop on Slow-Fast Dynamics: Theory, Numerics, Application to Life and Earth Sciences, June 03 – 07, Centre de Recerca Matemàtica, Barcelona.
23. beim Graben, P. (2013). Inverse problems in cognitive neuroscience. Talk presented at the Charité Elastography Group Colloquium, Humboldt-Universität zu Berlin, April 09, Berlin.
24. beim Graben, P. (2013). EKP-Komponenten und mentale Repräsentationen als “metastabile Zustände”: Ein vereinheitlichender Zugang zur Analyse und Modellierung

ereigniskorrelierter Gehirnpotenziale. Talk presented at the 4th Linguistic Method Workshop, Humboldt-Universität zu Berlin, February 27, Berlin.

25. beim Graben, P. (2013). Quanten-Hirn oder Quanten-Geist? – Emergente Quanteneffekte in klassischen dynamischen Systemen. Talk presented at the Joint Colloquium of Physics and Chemistry, TU Ilmenau, January 15, Ilmenau.
26. beim Graben, P. (2012). Detecting metastable states by recurrence-based symbolic dynamics. Talk presented at Cortex Group Seminar, INRIA CR Nancy, October 31, Nancy.
27. beim Graben, P. (2012). Dynamic cognitive modeling of language-related brain potentials. Talk presented at Cortex Group Seminar, INRIA CR Nancy, December 11, Nancy.
28. beim Graben, P. (2012). Coupling neural network activity to the electromagnetic field. Talk presented at the Nanobiosystemtechnik group, TU Ilmenau, September 12, Ilmenau.
29. beim Graben, P. (2012). Incompatibility between symbolic computation and (neuro-) dynamics. Talk presented at the Workshop on Quantum Cognition, July 8 – 11, Filzbach (CH).
30. beim Graben, P. (2012). Contextual emergence of cognitive symbol processing. Talk presented at the Emergence Workshop (in German), Collegium Helveticum Zürich, June 05, Zürich.
31. beim Graben, P. (2012). Algebraic representations of cognitive computations. Talk presented at the Centre for Robotics and Neural Systems, Plymouth University, April 17, Plymouth.
32. beim Graben, P. (2011). The horse raced past: Gardenpath processing in dynamical systems. Talk presented at the Ninth Tbilisi Symposium on Logic, Language, and Computation. September 26 – 30, Kutaisi (Georgia).
33. beim Graben, P. (2011). Dynamic cognitive modeling of language-related brain potentials. Talk presented at the Max Planck Institute for Human Cognitive and Brain Sciences, July 20, Leipzig.
34. beim Graben, P. (2011). Dynamic cognitive modeling in computational neurolinguistics. Talk presented at the Department of Computer Science, University of Sheffield, May 24, Sheffield.
35. beim Graben, P. (2011). Dynamic cognitive modeling in computational neurolinguistics. Talk presented at the Institute of Neurology, University College London, May 16, London.
36. beim Graben, P. (2011). Dynamic cognitive modeling in psycholinguistics. Talk presented at the Department of Cognitive Science, Johns Hopkins University, May 04, Baltimore.
37. beim Graben, P. (2011). Dynamic cognitive modeling in psycholinguistics. Talk presented at the Sección Biofísica Seminar, Universidad de la República Uruguay. April 26, Montevideo.

38. beim Graben, P. (2011). Dynamical systems in psycholinguistics. Talk presented at the International Symposium Living Nonlinear Dynamics. University of California at San Diego, April 21, San Diego.
39. beim Graben, P. & Rodrigues, S. (2011). Microscopic coupling of neural activity to the electromagnetic field. Talk presented at the Applied Nonlinear Mathematics Seminar, University of Bristol, March, 18, Bristol (UK).
40. beim Graben, P. (2011). Coarse grainings in neuroscience. Talk presented at the Bernstein Center Freiburg, February 23, Freiburg.
41. beim Graben, P. (2010). Dynamic cognitive modeling of syntactic language processing. Talk presented at the Faculty of Linguistics and Literary Studies, University of Bielefeld, November 24, Bielefeld.
42. beim Graben, P. (2010). Epistemic quantization of classical dynamical and neural systems. Talk presented at the Symposium on Generalized Quantum Theory, July 4 – 7, Frankfurt/Oder.
43. beim Graben, P. (2010). Stable heteroclinic sequences as a paradigm for dynamic psycholinguistics. Talk presented at The First Peripatetic Workshop in Dynamic Psycholinguistics, May 28, Zakopane (Poland).
44. beim Graben, P. (2009). Contextual emergence in neurodynamics. Whitehead Lecture in Cognition, Computation & Creativity at Goldsmiths College, University of London, December 02, London.
45. beim Graben, P. (2009). Dynamic cognitive modeling of syntactic language processing. Talk presented at the Center for Cognitive Science and Cognitive Systems, University of Kent, December 01, Canterbury.
46. Gerth, S. & beim Graben, P. (2009). A unification of symbolic and connectionist computation – A minimalist connectionist parser. Talk presented at the Zentrum für Allgemeine Sprachwissenschaft (ZAS), November 19, Berlin.
47. beim Graben, P. (2009). Contextual emergence in neurodynamical systems. Talk presented at the Neurodynamics and Consciousness Laboratory, University of Sussex, August 24, Brighton.
48. beim Graben, P. (2009). Dynamic cognitive modeling of syntactic language processing. Talk presented at the Institute for Logic, Language and Computation, University of Amsterdam, June 29, Amsterdam.
49. beim Graben, P., Gerth, S., Hale, J. T. & Vasisht, S. (2009). Harmonic minimalist grammars. Talk presented at the Psycholinguistics Colloquium, University of Potsdam, May 19, Potsdam.
50. beim Graben, P. (2009). Symbolic dynamics as a unifying framework for cognitive modeling and ERP analysis. Talk presented at the Information and Cognition Research Group, Middlesex University London, January 23, London.

51. beim Graben, P. (2008). Pragmatic information for cognitive agents. Talk presented at the Workshop Coordination of Agents, King's College London, November 4 – 5, London.
52. beim Graben, P. (2008). Dynamical system approaches to event-related brain potentials. Talk presented at the Colloquium of the Department for Cognitive Neurology, Max Planck Institute for Human Cognitive and Brain Sciences, September 16, Leipzig.
53. beim Graben, P. & Atmanspacher, H. (2008). Epistemic quantization of classical dynamical systems. Talk presented at the Perspective in Physics and Philosophy Conference, June 16 – 19, Paris.
54. beim Graben, P. (2008). Symbolic dynamics of event-related brain potentials. Talk presented at the EEG Workshop of the DFG Research Unit Computational Modeling of Behavioral, Cognitive, and Neural Dynamics at the University of Potsdam, April 06 – 08, Potsdam.
55. beim Graben, P. (2008). Der Parser hüpfte im Carré: Ein nichtlineares dynamisches Sprachverarbeitungsmodell. Talk presented at the Faculty of Philology, Ruhr University Bochum, January 24, Bochum.
56. beim Graben, P., Gerth, S. & Vasisht, S. (2007). Fock space models of language-related brain potentials. Talk presented at the Institute of Linguistics, University of Potsdam, December 12, Potsdam.
57. beim Graben, P. (2007). Language processing with atom orbitals. Talk presented at the Kolloquium des IGPP, September 12, Freiburg / Breisgau.
58. beim Graben, P. (2007). Symbolic dynamics as a unifying framework for cognitive modeling and ERP analysis. Talk presented at the Bernstein Center for Computational Neuroscience Berlin (BCCN), Technical University Berlin, August 29, Berlin.
59. beim Graben, P. (2007). Contextual emergence of conscious states from neurodynamics. Talk presented at the Institute for Adaptive and Neural Computation, University of Edinburgh, August 21, Edinburgh.
60. beim Graben, P. (2007). Symbolic dynamics of neurophysiological data. Talk presented at the PASCAL Workshop on Methods of Data Analysis in Computational Neuroscience and Brain Computer Interfaces June, 29, Berlin.
61. beim Graben, P. (2006). Pragmatic information in dynamic semantics. Talk presented at the Zentrum für Allgemeine Sprachwissenschaft (ZAS), November 13, Berlin.
62. beim Graben, P. & Atmanspacher, H. (2006). Contextual emergence of mental states from neurodynamics. Talk presented at the Workshop on Aspects of Mind-Matter Research, July 03, Wildbad Kreuth.
63. beim Graben, P., Drenhaus, H., Saddy, D. & Frisch, S. (2006). When the average is not enough – On the processing of negative polarity items revealed by the Symbolic Resonance Analysis. Talk presented at the Biopsychologisches Kolloquium der Humboldt-Universität Berlin, February 01, Berlin.

64. beim Graben, P. & Atmanspacher, H. (2005). Contextual emergence of neural correlates of consciousness. Talk presented at the IGPP Mini-Workshop on Neural Correlates of Consciousness, October 11, Freiburg / Breisgau.
65. beim Graben, P. (2005). Modeling language processing ERPs by dynamical systems. Talk presented at the IGERT Program in Cognitive Science of the Michigan State University, May 30, East Lansing (USA).
66. beim Graben, P. (2005). Simulation of EEG properties with random networks of leaky integrator neurons. Talk presented at the “Minisymposium on Synchronisation in Complex Neural Systems” at the SIAM Conference on Applications of Dynamical Systems, May 24, Snowbird (USA).
67. beim Graben, P. & Frisch, S. (2004). Case-specific processing differences as revealed by symbolic resonance analysis of event-related brain potentials. Talk presented at the Biopsychologisches Kolloquium der Universität Magdeburg, November 19, Magdeburg.
68. beim Graben, P. (2004). Pragmatic information in dynamic semantics. Talk presented at the IGPP-Seminar, July 27, Freiburg / Breisgau.
69. beim Graben, P. (2004). Symbolic dynamics of neurophysiological data. Talk presented at the Mathematisches Seminar der Universität Lübeck, July 14, Lübeck.
70. beim Graben, P. & Frisch, S. (2004). Case-specific processing differences as revealed by symbolic resonance analysis of event-related brain potentials. Talk presented at the Biopsychologisches Kolloquium der Humboldt-Universität Berlin, June 03, Berlin.
71. beim Graben, P. & Jurish, B. (2004). Context-free parsing by dynamical systems. Talk presented at the Workshop on Mathematical Methods in Computational Linguistics, April 28, Potsdam.
72. beim Graben, P. & Atmanspacher, H. (2003). Complementarity in dynamical systems – some preliminary ideas. Talk presented at the IGPP-Seminar, October 29, Freiburg / Breisgau.
73. beim Graben, P. (2003). Random networks of leaky integrator units. Talk presented at the IGPP, October 24, Freiburg / Breisgau.
74. beim Graben, P. & Frisch, S. (2003). Detecting subthreshold events in brain potentials. Talk presented at the Max Planck Institute for Cognitive Neuroscience, July 28, Leipzig.
75. beim Graben, P., Frisch, S. & Jäger, G. (2003). Applications of symbolic dynamics to ERP and stochastic OT. Talk presented at the Workshop on Logic, Neural Networks, and Optimality Theory, July 24, Berlin.
76. beim Graben, P. (2003). Complementarity in symbolic dynamics. Talk presented at the Workshop on Aspects of Mind-Matter Research, June 26, Wildbad Kreuth.
77. beim Graben, P. (2003). Symbolic dynamics of neurophysiological data. Talk presented at the Kolloquium des IGPP, January 16, Freiburg / Breisgau.

78. beim Graben, P. (2002). Language processing by dynamical systems. Talk presented at the Colloquium of the Institute for Mathematical Behavioral Science at the University of California at Irvine, April 14, Irvine (USA).
79. beim Graben, P. (2002). Language processing by dynamical systems. Talk presented at the Colloquium of the Center for Complex Systems and Brain Sciences at the Florida Atlantic University, April 12, Boca Raton (USA).
80. beim Graben, P., Saddy, J. D., Meinke, A. & Jarick, S. (2001). Symbolic dynamics of neurophysiological data. Talk presented at the Neurophysikalisches Kolloquium der FU-Berlin, May 28, Berlin.

Contributed Talks

1. beim Graben, P. (2014). Contextual emergence of intentional systems. Talk presented at Toward a Science of Consciousness Conference 2014, April 22, Tucson (AZ).
2. beim Graben, P. (2013). Reanalysis and limited repair parsing in neural networks: Leaping off the garden path through bifurcations. Talk presented at the Symposium “Language as a Window into the Brain and its Pathologies” at the 35th Annual Meeting of the Cognitive Science Society, July 31 – August 3, Berlin.
3. beim Graben, P. (2013). Contextual emergence of intentionality. Talk presented at the 3rd AISB Workshop: “The Emergence of Consciousness”, May 09, St Mary’s University College London.
4. beim Graben, P. (2013). Order effects in dynamic semantics. Talk presented at the 14th Szklarska Poreba Workshop, March 01 – 04, Szrenica (Poland).
5. beim Graben, P. (2012). Symbolic computation in partitioned dynamical automata. Talk presented at the Partition Workshop, Humboldt-Universität zu Berlin, September 19, Berlin.
6. beim Graben, P. & Potthast, R. (2012). Dynamic field automata. Talk presented at the 5th AISB Symposium on Computing, Philosophy and the Question of Bio-Machine Hybrids; AISB/IACAP World Congress 2012 – Alan Turing 2012, University of Birmingham, July 02 – 06, Birmingham.
7. beim Graben, P. & Potthast, R. (2012). Dynamic field automata. Talk presented at the Symposium on Natural/unconventional computing and its philosophical significance; AISB/IACAP World Congress 2012 - Alan Turing 2012, University of Birmingham, July 02 – 06, Birmingham.
8. beim Graben, P. (2012). Dynamic field automata. Talk presented at the Special Session “Cognitive Architectures in Dynamic Field Theory”; Second International Conference on Neural Field Theory, University of Reading, April 19 – 21, Reading.
9. beim Graben, P. (2012). Licensing negative polarity items in a minimalist framework. Talk presented at the 13th Szklarska Poreba Workshop, February 09 – 12, Szrenica (Poland).

10. beim Graben, P. (2010). Stable heteroclinic sequences as a paradigm for dynamic psycholinguistics. Talk presented at the Tandem Workshop on Optimality in Language and Geometric Approaches to Cognition, Zentrum für Allgemeine Sprachwissenschaft (ZAS), December 11 – 13, Berlin.
11. beim Graben, P., Rodrigues, S., Potthast, R., & Wright, J. J. (2010). Coupling fields together: Towards a grand unified neural field theory. Talk presented at the International Conference Progress in Neural Field Theory, September 16 – 18, Reading.
12. beim Graben, P. (2010). Contextual emergence of cognitive computation. Talk presented at the 11th Szklarska Poreba Workshop, March 12 – 15, Szrenica (Poland).
13. beim Graben, P. & Atmanspacher, H. (2009). Contextual emergence of mental states from their neural correlates. Talk presented at the Joint Annual Meeting of the Society for Mathematical Psychology and the European Mathematical Psychology Group (MathPsych), August 1 – 4, Amsterdam.
14. beim Graben, P., Gerth, S., Hale, J. T. & Vasishth, S. (2009). Modeling processing gradient through harmonic minimalist grammars. Talk presented at the 10th Szklarska Poreba Workshop, March 12 – 16, Szrenica (Poland).
15. Gerth, S. & beim Graben, P. (2008). Tensor product models for language-related brain potentials. Talk presented at the Workshop on Dynamical Systems in Language, University of Reading, September 08 – 09, Reading (UK).
16. beim Graben, P. & Potthast, R. (2008). Language processing with dynamic fields. Talk presented at the Workshop on Dynamical Systems in Language, University of Reading, September 08 – 09, Reading (UK).
17. beim Graben, P. (2007). Quantum representation theory for nonlinear dynamical automata. Talk presented at the 1st International Conference on Cognitive Neurodynamics (ICCN), November 19, Shanghai (China).
18. beim Graben, P. & Atmanspacher, H. (2007). Contextual emergence of macroscopic states in neural networks. Talk presented at the 14th Fall Academy “Theory in Cognitive Neuroscience”, November 7, Wildbad Kreuth (Germany).
19. beim Graben, P., Gerth, S., Saddy, D. & Potthast, R. (2007). Fock space representations in neural field theories. Talk presented at Waves 2007. The 8th International Conference on Mathematical and Numerical Aspects of Waves, July 24, University of Reading.
20. beim Graben, P. (2007). Quantum representation theory for nonlinear dynamical automata. Talk presented at the 8th Szklarska Poreba Workshop, February 23 – 26, Szrenica (Poland).
21. Drenhaus, H., beim Graben, P., Saddy, D. & Frisch, S. (2006). Diagnosis and repair of negative polarity constructions. Talk presented at the 7th Szklarska Poreba Workshop, March 03 – 07, Szrenica (Poland).
22. beim Graben, P. (2006). Pragmatic information in dynamic semantics. Talk presented at the 7th Szklarska Poreba Workshop, March 03 – 07, Szrenica (Poland).

23. beim Graben, P., Drenhaus, H., Saddy, D. & Frisch, S. (2005). When the average is not enough – On the processing of negative polarity items revealed by the Symbolic Resonance Analysis. Talk presented at the Workshop “Polarity Meets Psycholinguistics” at the University of Potsdam, December 08 – 09, Potsdam.
24. beim Graben, P. (2005). Grounding symbols in dynamical systems. Talk presented at the Tandem-Workshop “Advanced Methods of Electrophysiological Signal Analysis (Part A) and Symbol Grounding? Dynamical Systems Approaches to Language (Part B)” at the University of Potsdam, March 14 – 17, Potsdam.
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Other Writings

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In Preparation

1. beim Graben (subm.). Contextual emergence in neuroscience.
2. Tasic, T., Sellers, K. K., Fröhlich, F., Fedotenkova, M., beim Graben, P., & Hutt, A. (under rev.). Statistical analysis of trial-to-trial variability for biophysiological recurrence plots.
3. Carmantini, G. S., beim Graben, P., Desroches, M., & Rodrigues, S. (subm.). From Turing Machines to neural dynamics: Towards neuro-computational models for unifying physiology and behavior.
4. Bishop, R. C. & beim Graben, P. (in prep.). Contextual emergence of deterministic and stochastic descriptions.
5. beim Graben, P., Sellers, K. K., Fröhlich, F. & Hutt, A. (in prep.). Recurrence structure analysis for dynamical systems.