Curriculum Vitae

Prof. Dr. rer. nat. habil. Sonja Grün
Office: Institute of Neuroscience and Medicine (INM-6) &
Institute for Advanced Simulation (IAS-6) &
JARA Brain Institut I (INM-10)
Statistical Neuroscience Group
Forschungszentrum Jülich GmbH
Bldg 15.22, Room 4012group
52425 Jülich, Germany
tel: +49-2461-614748 (secr)
fax: +49-2461-619460
email: s.gruen@fz-juelich.de
http://www.csn.fz-juelich.de

born: January 4th, 1960 in Sindelfingen, Germany
marital status: married to Prof. Dr. Markus Diesmann

1 Education

2003	Habilitation and venia legendi in 'Neurobiology and Biophysics', Albert-Ludwigs Univ., Freiburg, Germany
1996	Dr. rer. nat. obtained from the Faculty of Astronomy and Physics at the Ruhr-Univ., Bochum, Germany. Ph.D. thesis: 'Unitary Joint-Events in Multiple-Neuron Spiking Activity: Detection, Significance, and Interpretation'. Supervisors: Prof. A. Aertsen and Prof. C. von der Malsburg
1991	Diploma in Physics, obtained at the Eberhard-Karls Univ., Tübingen, Germany. Master thesis: 'Neuronal Model of binaural Interaction in the auditory system in the Barn Owl' at the Max-Planck Inst. for Biological Cybernetics, Tübingen, Germany. Supervisors: Dr. A. AertseMn and Dr. H. Wagner
1984 – 1991	Study of Physics and Psychology at the Eberhard-Karls Univ., Tübingen, Germany
1983	High School Diploma ('Abitur')
1980 – 1983	Additional schooling towards matriculation standard in Sindelfingen Germany ('Zweiter Bildungsweg')
1977 – 1980	Training as an Electronician at IBM in Sindelfingen, Germany

2 Professional Experience

Since 10/2018	Director of Institute of Neuroscience and Medicine (INM-6 and INM-10), Jülich Research Center, Germany
10/2011- 9/2018	Vice director of Institute of Neuroscience and Medicine (INM-6), Jülich Research Center, Germany
1/2014 – 9/2016	Guest Professor at Osaka University, Japan
Since 3/2011	Group Leader, Institute of Neuroscience and Medicine, INM-6, Lab for Statistical Neuroscience, Jülich Research Center, Germany
Since 3/2011	Professor (full) for Theoretical Systems Neurobiology, RWTH Aachen University, Germany
3/2011 - 8/2011	Team Leader (part time), Laboratory for Statistical Neuroscience, RIKEN Brain Science Institute, Wako-City, Japan
7/2010 - 2/2011	Team Leader, Laboratory for Statistical Neuroscience, RIKEN Brain Science Institute, Wako-City, Japan

9/2006 - 6/2010	Unit Leader, Unit of Statistical Neuroscience, RIKEN Brain Science Institute, Wako-City, Japan
6/2006 - 8/2006	Unit Leader (part time), Unit of Statistical Neuroscience, RIKEN Brain Science Institute, Wako-City, Japan
2/2004 - 8/2006	Assistant-Professor (C2) for Neuroinformatics/Theoretical Neuroscience, Freie Univ., Berlin, Germany
11/2003 - 2011	'Privatdozentin' (lecturer) for Neurobiology and Biophysics, Albert-Ludwigs Univ., Freiburg, Germany
12/2002-8/2006	'Forschungsdozentin' (equiv. junior professor) for Neuroinformatics/ Theoretical Neuroscience, Freie Univ., Berlin, Germany
1998 - 2002	Senior Fellow, Max-Planck Inst. for Brain Research in Frankfurt, Germany (Dept. Prof. W. Singer)
1995 - 1997	Postdoctoral Research Fellow, Dept. of Physiology Hebrew Univ., Jerusalem, Israel (Dept. Prof. M. Abeles)
1994 - 1995	Research Assistant, Weizmann Institute of Science, Rehovot, Israel
1991 - 1994	Research Assistant, Inst. for Neuroinformatics, Ruhr-Univ., Bochum, Germany
1983 - 1989	Part-time employment as an Electronician in various companies

3 Fellowships and Awards

2019-2020	Head of Metadata Hub, HGF Research Area "Information"
Since 10/2016	WP leader "Tools and Curation for Integrated Parallelized Analysis of Activity Data" in the Human Brain Project, EU Grant 720270 (HBP)
Since 4/2016	Task leader "Comparing activity dynamics of models and living brains" in the Human Brain Project, EU Grant 720270 (HBP)
Since 4/2016	Co-Chair of Co-Design Project CDP4 "Sensorimotor Integration" in the Human Brain Project, EU Grant 720270 (HBP)
Since 1/2015	Member of Advisory Board of the Bernstein Center for Computational Neuroscience, Berlin, Germany
1/2014 - 9/2016	Guest Professor at Osaka University, Japan
Since 9/2011	Visiting Scientist, RIKEN Brain Science Institute, Wako-City, Japan
10/2013 – 3/2015	WP leader "Tools for analysis of functional data" in the Human Brain Project, EU Grant 604102 (HBP)
2011	Extra funding from Jülich Research Center to build-up an in-vivo electrophysiology set-up for massively parallel recordings in multiple cortical areas to study visuo-motor coordination. Laboratory is set up at the site of the experimental partners at INT-AMU, CNRS Marseille.
11/2009	Letter of Appreciation by the head of RIKEN for excellent research achievements
9/2008	Offer, W2-professorship (tenure) "Theoretical Systems Neurobiology", RWTH Aachen University, Germany
7/2008	Invited, W3-professorship 'Computational Neuroscience', Centre for Interactive Neuroscience and Eberhard-Karls Univ., Tübingen, Germany
2006 - 2012	Listed "Collaborator" of the Research School in Systems Biology at the Norwegian University of Life Sciences (UMB), Ås, Norway
2006	Co-author of component "The human brain model: Connecting neuronal structure and function across temporal and spatial scales" in "Helmholtz Initiative Systems Biology", Germany
2006	Invited, Professorship "Neurophysiology (Computational Neuroscience)", Univ. Bern, Switzerland
2006	Invited, W2-professorship "Theoretical Neurobiology and Neuro-informatics", Humboldt Univ., Berlin, Germany

2004 - 2007	Principal investigator of the Bernstein Center for Computational Neuroscience Berlin, Germany
2004	Founding member of the Bernstein Center for Computational Neuroscience Berlin, Germany
2002- 2006	'Forschungsdozentur' for Neuroinformatics/Theoretical Neuroscience awarded for 5 years by the Stifterverband für die Deutsche Wissenschaft
2002	ICNC fellowship in the NEURALCOMP LSF Program
1996 - 1997	Postdoctoral Research Fellowship of the Minerva Foundation
1995	Postdoctoral Research Fellowship of the Lady Davis Foundation
1990	M.Sc.-Fellowship from the Max-Planck Association at the MPI for Biological Cybernetics, Tübingen, Germany

4 Review Activities

Scientific Journals:

* Biological Cybernetics * Cerebral Cortex * Computational Intelligence and Neuroscience * Experimental Brain Research * Frontiers * Human Movement Science * International Journal of Bifurcation and Chaos * Journal of Computational Neuroscience * Journal of Neurophysiology * Journal of Neuroscience Methods * Journal of Neuroscience * Journal of Theoretical Biology * Network: Computational in Neural Systems* Neural Computation * Neural Networks * Neurocomputing * Physical Review E * PLos Computational Biology * Plos ONE * Proceedings of the Royal Society, London * PNAS * Science * The European Physical Journal B*

Scientific Books:

Springer

International Conferences:

Computational Neuroscience Meeting CNS* (since 2005),
International Conference on Neuro-Information Processing (ICONIP 2008)

Grant Giving Institutions:

Dutch Organization for Research (NOW)

German Research Foundation (DFG)

German Ministry for Education and Science (BMBF)

Human Frontier Science Program (HFSP)

European Commission (EC)

Academic Reviews:

7 Professorships (or equivalent)

12 PhD thesis committees

Jülicher Exzellenzpreis since 2015

5 Editing Activities

- Guest editor for PLos Computational Biology
- Member of the editorial board Bernstein Book Series, Springer
- Member of the editorial board of e-Neuroforum of the German Neuroscience Society

- Section editor “Spike Train Analysis”, online Encyclopedia “Computational Neuroscience”, Springer (since 2015)
- Co-editor book ‘Analysis of parallel spike trains’. Springer Series on Computational Neuroscience 106, (2010), ISBN 978-1-4419-0377-8

6 Funding

2019-2020	Metadata Hub, HGF Research Area “Information” (1.3 Mio €)
Since 10/2018	DFG Research Training Group “MultiSenses-MultiScales” with Marc Spehr et al.
2018 – 2020	Human Brain Project (HBP), EU Grant 785907 (SGA2, 460.000 €)
2017 - 2020	Helmholtz Analytics Framework, pilot project in “Information & Data Science“ (12 PM/year)
2016 - 2018	Human Brain Project (HBP), EU Grant 720270 (SGA1, 450.000 €)
2016 - 2018	DFG Priority Program SPP 1665 “Causative Mechanisms of Mesoscopic Activity Patterns in Auditory Category Discrimination”, with F. W. Ohl and B. Schmidt) (Grant GR 1753/4-2, 132.000 €)
2013 - 2016	“Neuronal mechanisms of active vision studied by combining large scale sampling of neural activity and advanced computational analysis”, International Joint Research Promotion Program, Osaka University, Osaka, Japan (with Prof. Ichiro Fujita, Osaka Univ.)
2013 - 2016	Human Brain Project (HBP), EU Grant 604102 (RUP, 143.000 €)
2013 - 2016	DFG Priority Program SPP 1665, „Causal Mechanisms of Mesoscopic Activity Patterns in Categorization of Auditory Discrimination“, with F. W. Ohl and B. Schmidt) (GR 1753/4-1; 129.100 €)
2013 - 2016	Clinical Research Group KFO 219, TP12 “Characterization of the relation of LFPs and spiking activity in Nucleus subthalamicus in Morbus Parkinson patients”, with M. Denker (Jülich) and L. Timmermann (Univ. Clinics Cologne) (180.000 €)
2013 - 2017	Portfolio theme ‘Supercomputing and Modelling for the Human Brain’ (SMHB) in the Helmholtz Initiative, together with Helmholtz Centers FZJ, HMGU, DKFZ; EPFL Lausanne, McGill University, Montreal; RWTH Aachen Univ., INCM, CNRS, Marseille (total of 17.5 Mill €) (my part: 1 Postdoc, 2 PhD positions for 5 years)
2012 - 2015	German-Japanese Joint Computational Neuroscience Program, ‘Impact of top-down influence on visual processing during free viewing: multi-scale analysis of multi-area massively parallel recordings of the visual pathway’, together with H Tamura, Osaka Univ. and Shigeru Shinomoto, Kyoto Univ., Japan (BMBF, 01GQ1114) (total of 540.000 € for German side)
2008 - 2012	Human Brain Model network in Helmholtz Initiative on Systems Biology, with M. Diesmann, RIKEN BSI, Japan, R. Kötter, Radboud Univ. Medical Centre Nijmegen, Netherlands, and K. Zilles, Forschungszentrum Jülich, Germany (total: 8 Mill €, 5 years)
2007 - 2012	eNEURO: Multilevel neural simulation and modeling in Norwegian eScience - Infrastructure, theory and application (eVITA) program (total: 2.5 Mill €)
2007 - 2008	Neural code and computations by local cortical networks: modeling and experiments’, RIKEN Strategic Research Program for R&D with M. Diesmann and T. Fukai, both RIKEN BSI, Japan (30.000.000Yen)
2005	Contract with Honda Research Inst Europe for research project (with M.-O. Gewaltig and Dr. U. Körner) on ’Statistical analysis of eye movements and their relation to neuronal activity’ (10.000 €)
2004 - 2006	PhD-stipend (NaFög, Funding by the Land Berlin) for Benjamin Staude on the project ‘Identification of neuronal assemblies in massively parallel spike trains (24.000 €/year)
2004 - 2006	Research project ’The role of spike synchronization in olfactory coding, learning and memory retrieval’ in the Bernstein Center for Computational Neuroscience, Berlin funded by the BMBF (with R. Menzel (PI), FU Berlin; 77.800 €/year)

2004 - 2009	Research project ’Relating observations of in-vivo network dynamics at different spatio-temporal scales’ in the Bernstein Center for Computational Neuroscience, Berlin funded by the BMBF (with R. Kempter, HU Berlin and K. Obermayer, TU Berlin; 77.800 €/year)
2004	Contract with Honda Research Inst Europe for research project (with Dr. M.-O. Gewaltig and Dr. U. Körner) on ’Statistical analysis of eye movements and their relation to neuronal activity’ (10.000 €)
2003 - 2006	Grant from the Volkswagen Foundation for a research project on ‘Dynamics of Cortical Cell Assemblies - Experiments and Theory’, with the group of A. Engel, (University Hamburg) and the group of M. Munk (MPI for Brain Research, Frankfurt/M) (194.802 €)
2002 - 2006	Forschungsdozentur from the Stifterverband für die deutsche Wissenschaft (300.000 €, incl. own position)

7 Committees / Review Boards / Community Building

2019	Participitation at NFDI (National Forschungsdateninfrastruktur) conference
2019	Member of review committee “Neuroengineering MSNE” graduate school
2019	Member of selection committee W2 Prof. ‘Theoretische Nanospintronik’, IAS-1 (Jülich Research Center together with University Duisburg-Essen)
2019	Member of selection committee W2 Prof. ‘Simulation of scientific processes’, TU Chemnitz
Since 2019	Speaker of the Computational Neuroscience Section of the NWG (Neurowissenschaftliche Gesellschaft)
Since 2017	Member of the steering committee ‘Research Data Management’ of the Jülich Research Center
Since 2015	Member of the committee ‘Jülich Excellence Price’ of the Jülich Research Center
Since 2014	Member of Scientific Advisory Board of the Bernstein Center Berlin
2014	Review committee member for DFG Graduate School 1589 "Sensory Computation in Neural Systems"
2013 - 2014	Member search committee for W2 professorship at RWTH Aachen
Since 2013	Board member of the Simulation Lab Neuroscience, Jülich Research Center
2013	Chair of organizing committee ‘Annual INM Retreat’ 2013
Since 2012	Member of the Bernstein Program Committee ‘Computational Neuroscience’
2012 - 2013	Program committee member of the INCF meeting 2013
2012 - 2014	Program committee member of the yearly intern. conference of the Organization for Computational Neuroscience (OCNS)
2012	Chair of organizing committee ‘Annual INM Retreat’ 2012
2012	Member of the INCF workgroup on Method Validation
Since 2011	Member of JARA Brain of RWTH Aachen Univ. and Jülich Research Center
Since 2011	Member of JARA FIT of RWTH Aachen Univ. and Jülich Research Center
2010	Search committee (Search II), RIKEN Brain Science Institute, Wako-Shi, Japan
2009 - 2010	Academic council, RIKEN Brain Science Institute, Wako-Shi, Japan
2009	Organizing committee ’RIKEN summer program 2009’
2009	Program committee ’Systems Biology in Germany - Symposium 2009’
2009	Search committee, RIKEN Brain Science Institute, Wako-Shi, Japan
2008	BMBF Review board ’Independent Research Groups in the Neurosciences’, Germany
2007 - 2011	Cooperating with German organizations (DAAD, DFG, BMBF, BCCN) to promote exchange of students and scientists with Japan
2007	Technical committee of ICONIP meeting
2005 - 2007	Member of the program committee of the yearly intern. Computational Neuroscience conference (CNS*)

2005 - 2006	Representative of the 'Fachbereich Biologie, Chemie, Pharmazie' of the Freie University in the joint commission of the Charite, Freie University, Humboldt University and Technical University, Berlin (organization of new MSc study program 'Computational Neuroscience')
2004 - 2006	Organisatorial commission of the Bernstein Center for Computational Neuroscience, Berlin
2003 - 2006	Representative of the 'Fachbereich Biologie, Chemie, Pharmazie' in the 'Gemeinsame Komission Bioinformatik', Free Univ., Berlin (organization of BSc and MSc study program in bioinformatics)

8 Memberships

- American Society for Neuroscience (SFN)
- European Society for Neuroscience (FENS)
- German Society for Neuroscience (NWG)
- Japan Neuroscience Society (JNS) (2007-2011)
- Japan Neuron Network Society (JNNS) (2007-2011)
- Organization for Computational Neuroscience (OCNS)
- Bernstein Computational Neuroscience e.V.

9 Organization of Workshops and Schools

Sept 2019	Co-organizer of Satellite Workshop "Brain circuit insight: from brain circuit models to brain circuit insights" at Bernstein Conference 2019, Berlin, Germany
May 2019	Co-organizer '14th Vision for Action Workshop', Research Center Jülich, Germany
April 2019	Co-organizer of international School `Advanced Neural Data Analysis Course` (ANDA 2019), Haus Overbach, Jülich-Barmen, Germany (with Profs. M. Nawrot, Univ. Cologne and T. Wachtler, G-node, Munich)
Since 10/2018	DFG Research Training Group "MultiSenses-MultiScales" with Marc Spehr et al.
Sept 2018	Co-organizer of HBP CDP4 Workshop "Visuo-Motor Integration"
July 2018	Co-organizer '12th Vision for Action Workshop', Research Center Jülich, Germany
March 2018	Co-organizer of international School `Advanced Neural Data Analysis Course` (ANDA 2018), Haus Overbach, Jülich-Barmen, Germany (with Profs. M. Nawrot, Univ. Cologne and T. Wachtler, G-node, Munich)
June 2017	Co-organizer '10th Vision for Action Workshop', Research Center Jülich, Germany
Apr 2017	Co-organizer of international School `Advanced Neural Data Analysis Course` (ANDA 2017), Haus Overbach, Jülich-Barmen, Germany (with Profs. M. Nawrot, Univ. Cologne and T. Wachtler, G-node, Munich)
Oct 2016	Co-organizer of Intern. Workshop 'Vision over Vision: Man, Monkey, Machine and Models', Osaka, Japan
Sept 2015	Co-organizer of Satellite Workshop 'Reproducibility in the neurosciences: Workflows, provenance tracking and data sharing', Bernstein Conference, Heidelberg, Germany
May 2016	Co-organizer '8th Active Vision Workshop', Research Center Jülich, Germany
Apr 2015	Co-organizer '6th Active Vision Workshop', Research Jülich Center, Germany
Mar 2015	Organizer of Community Session 'Reproducibility in the neurosciences: Novel tools and links to the Human Brain Project (HBP) platforms and the International Neuroinformatics Coordinating Facility (INCF)', Göttingen Univ., Göttingen
Nov 2014	Co-organizer of Workshop "SPP 1665 Analytical Workshop: Analysis and Management of Electrophysiological Activity Data", Research Center Jülich, Germany (with Dr. Michael Denker, Jülich Research Center)
July 2014	Co-organizer '4th Active Vision Workshop', Research Center Jülich, Germany

June 2014	Co-organizer '3rd Active Vision Workshop', Research Center Jülich, Germany
Dec 2013	Co-Organizer INCF Workshop "New Perspectives on Workflows and Data Management for the Analysis of Electrophysiological Data", Jülich Research Center, Germany (with Dr. Michael Denker (Jülich Research Center), Dr. Andrew Davison (CNRS, Gif-sur Yvette), Dr. Thomas Wachtler (G-Node, München)
Nov 2013	Co-organizer '2nd Active Vision Workshop', Research Center Jülich, Jülich, Germany
Sept 2013	Co-organizer '3rd Vision for Action Workshop', INT-AMU, CNRS, Marseille, France (with Dr. A. Riehle, CNRS, Marseille)
Aug 2013	Organizer of Workshop on 'Analysis and interpretation of massively parallel electrophysiological data', INCF Neuroinformatics 2013 Conference, Stockholm, Sweden
July 2013	Tutorial 'Managing complex workflows in neural simulation and data analysis', CNS*13, Paris, France
July 2013	Organizing chair of the Second Annual INM-Retreat, Jülich, Germany
Mar 2013	Co-organizer of Symposium at the German Neuroscience Society meeting, Göttingen, Germany on 'Practically profiting from the complexity of massively parallel electrophysiological data' (with Dr. Michael Denker, INM-6, Jülich, Germany)
Jan 2013	Organizer '2nd Vision for Action Workshop', Jülich Research Center, Germany
Oct 2012	Co-organizer of the international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ.. and BCCN, Freiburg, Germany)
July 2012	Organizing Chair of the First Annual INM-Retreat, Jülich Research Center, Germany
June 2012	Co-organizer BrainScaleS workshop 'Workflow design for complex analyses of multi-electrode electrophysiological data', Marseille, France (with Dr. Michael Denker, INM-6, Jülich Research Center, , Germany; Andrew Davison, CNRS, Gif sur Yvette, France; Alain Destexhe, CNRS, Gif sur Yvette, France; Alexa Riehle, INT, CNRS, Marseille, France)
Mar 2012	Organizer G-Node Winter Course in Neural Data Analysis, Munich, Germany
Mar 2012	Local Organizer, international Conference 'BrainScales 2012', Jülich Research Center, Germany
Oct 2011	Co-organizer of the international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. and BCCN, Freiburg, Germany)
Sept 2011	Co-organizer of international Workshop 'Spatio-temporal dynamics of massively parallel neuronal data in the cerebral cortex: Theory, analysis and experiments', Freie Univ. Berlin, Germany (with Prof. M. Nawrot, Freie Univ. Berlin, Dr. A. Riehle, CNRS, Marseille, France)
July 2011	Organizer, Tutorial 'Analysis of parallel spike trains', satellite at Computational Neuroscience Meeting CNS*11, Stockholm, Sweden
Mar 2011	Co-organizer of '3rd Japan-Germany Workshop on Computational Neuroscience', Okinawa Institute of Science and Technology, Kunigami, Okinawa, Japan
Oct 2010	Co-organizer of international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. and BCCN, Freiburg, Germany)
Sept 2010	Co-organizer Symposium on "Methods for analyzing neuronal signals", (with Prof. S. Shinomoto, Kyoto Univ., Japan), Neuro2010 (Joint Conference of: The 33rd annual Meeting of the Japan Neuroscience Society, The 53rd Annual Meeting of Japanese Society for Neurochemistry, and The 20th Annual Meeting of Japanese Neural Network Society), Kobe, Japan
Sept 2010	Co-organizer "Workshop on spatio-temporal neuronal computation", Kyoto, Japan (with Profs. S. Shinomoto and Y. Sakurai, both Kyoto Univ., Japan)
May 2010	Co-organizer workshop "Spike Metrics", University of Plymouth, UK (with Profs. T. Wennekers and R. Borisyuk, Univ. of Plymouth, UK; Prof. L. Smith, Univ. of Stirling, UK)
Mar 2010	Organization G-Node Winter Course in Neural Data Analysis, Mar 1-5, 2010 in Munich, Germany

Oct 2009	Co-organizer of the international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. and BCCN, Freiburg, Germany)
Oct 2009	Organizer Workshop 'Systems Biology of the Human Brain', Jülich, Germany (with Prof. R. Kötter, Radboud Univ. Medical Centre Nijmegen, Netherlands; Dr. M. Diesmann, RIKEN BSI, Wako-Shi, Japan)
Oct 2008	Co-organizer of the international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Prof. U. Egert and Prof. S. Rotter, Albrecht-Ludwigs Univ. and BCCN, Freiburg, Germany)
Feb 2008	Co-organizer 'Multi-Neuron Workshop', RIKEN BSI, Wako-Shi, Japan (with Prof. H. Ito, Kyoto Sangyo University, Japan)
Oct 2007	Organizer of international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. Freiburg, Germany)
Oct 2006	Organizer Workshop 'Systems Biology of the Human Brain', Jülich, Germany (with Prof. R. Kötter, Radboud Univ Medical Centre Nijmegen, Netherlands; Dr. M. Diesmann, RIKEN BSI, Wako-Shi, Japan)
May 2006	Organizer of Workshop on 'Spatio-temporal scales of cortical network dynamics', Monte Argentario, Italy
Mar 2006	Organizer of international Workshop on 'Motor cortex: Organization and function', CNRS, Marseille, France
Oct 2005	Organizer of international BCCN/NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. Freiburg, Germany)
Mar 2005	Organizer of Workshop of the cooperation 'Dynamics of Cortical Cell Assemblies - Experiment and Theory', Free University, Berlin, Germany
Oct 2004	Organizer of international NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ.. Freiburg, Germany)
Oct 2003	Organizer of international NWG Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany (with Prof. A. Aertsen, Dr. U. Egert and Dr. S. Rotter, Albrecht-Ludwigs Univ. Freiburg, Germany)
Sep 2002	Co-organizer of Workshop of the cooperation 'Dynamics of Cortical Cell Assemblies - Experiment and Theory', MPI for Brain Research, Frankfurt/M, Germany (with Dr. M. Munk, MPI for Brain Research, Frankfurt/M)
May 2002	Local organizer of Intern. Workshop 'Computational Neuroscience: Positions and Perspectives', MPI for Brain Research, Frankfurt, German (with Prof. A. Aertsen, Albert-Ludwigs Univ. Freiburg and Prof. A. Herz, Humboldt-Univ. Berlin)
Sep 2001	Co-organizer of NWG Summer School on 'Neural Computation', Ruhr-Univ. Bochum, German (with PD Dr. M. Lappe and Dr. D. Durstewitz, both Ruhr-Univ. Bochum, Germany and Dr. M. Hermann, MPI für Strömungsforschung, Göttingen, Germany)
Sep 2000	Co-organizer of NWG Summer School on 'Neural Computation', Ruhr-Univ. Bochum, Germany (with PD Dr. M. Lappe, Ruhr-Univ. Bochum, Germany and Prof. F. Wörgötter, Univ. of Stirling, Scotland)
Jan 2000	Organizer of 'Ringberg-Workshop', Tegernsee, Germany
Oct 1999	Co-organizer of Workshop 'BrainWorks 2000', in Gießhübel, Germany
May 1999	Co-organizer of Intern. Symposium on 'Concepts of Neuronal Cooperativity in the Cortex' at the German Neurobiology Conference, Göttingen, Germany (with Dr. S. Rotter, Albrecht-Ludwigs Univ. Freiburg, Germany)
Jun 1994	Co-organizer of 'Neuroworkshop 1994', Gimborn, Germany

10 Group members

Current lab members

- Dr. Frédéric Barthelemy (Postdoc)
- Dr. Michael Denker (Postdoc)
- Dr. Marcel De Haan (Postdoc)
- Dr. Junji Ito (Postdoc)
- Dr. Regimantas Jurkus (Postdoc)
- Dr. Jianing Sun (Data Manager)
- Danylo Ulianych (Coordinator Software Technology)
- Alessandra Stella (PhD student)
- Julia Sprenger (PhD student)
- Paulina Dabrowska (PhD student)
- Robin Gutzen (PhD student)
- Simon Essink (PhD student)
- Alexander Kleinjohann (PhD student)
- Shashwat Sridhar (Master student)
- Peter Bouss (Master student)
- Jan Lewen (Master student)
- Björn Müller (Trainee)
- Maximilian Kramer (Trainee)

Shared Administrative Staff

- Dr. Anne Elfgen (Scientific Coordinator)
- Dr. Cordula Huesgen (Scientific Coordinator)
- Dr. Maren Frings (Scientific Coordinator)
- Dr. Martina Reske (Scientific Coordinator)
- Janine Lehm (Secretary)
- Saskia Meißner (Secretary)
- Petra O'Brien (Secretary)

Former group members

- Dr. Michael von Papen (Postdoc)
- Dr. Nicole Voges (Postdoc)
- Carlos Canova (PhD student)
- Cristian Joana (PhD student)
- Pietro Quaglio (PhD student)
- Alper Yegenoglu (Software Developer)
- Jeyathevy Sukiban (PhD student)
- Emanuele Lucrezia (PhD student)
- Dr. Amin Mirzai
- Dr. Mehmet Suzen (Postdoc)
- Dr. Vahid Rostami (PhD, Postdoc) – now Postdoc at Univ. Cologne
- Dr. Paul Chorley (Postdoc)

- Dr. Sebastien Louis (Postdoc)
- Dr. Martin Nawrot (Postdoc) – now Prof. at Univ. Cologne
- Dr. Hideaki Shimazaki (Postdoc) – now Prof. at Kyoto Univ
- Dr. Emiliano Torre (PhD, Postdoc) – now at ETH Zürich
- Dr. Michel Vidal-Naquet (Postdoc) – now running a company in the US
- Dr. Denise Berger (PhD)
- Dr. Antonio Pazienti (PhD) – now at European Brain Research Institute, Rome
- Dr. Benjamin Staude (PhD) – now running his own company in Berlin
- Dr. Lyuba Zehl (PhD)
- Jens Hämmerling (PhD student)
- Richard Meyes (PhD student)
- Serge Strokov (PhD student)
- Long Phan (Software Developer) – now at IBM
- Mika Suzuki (intern from Osaka University, Japan)
- Denise Berger (MSc)
- Gordon Pipa (Diploma) – now Prof. at Univ of Oldenburg
- Gaby Schneider (Diploma) – now Prof. at Goethe Univ Frankfurt/Main
- Knut Virow (Diploma)
- Denise Berger (BSc)
- Martin Eisenkraut (BSc)
- Felix Franke (BSc)
- Christoph Gollan (BSc)
- Saskia Helbling (BSc)
- Falko Peter Hoffmann (BSc)
- Jana Pick (BSc)
- Matthias Schultze-Kraft (BSc)
- Julia Weingarten (BSc)

11 Experience in Supervision

11.1 Supervision of PhD Theses

- ‘Dynamical and Statistical Structure of Spatially Organised Neuronal Networks’. Moritz Layer (since 4/2018)
- ‘Higher Order Correlation Analysis in Massively Parallel Recordings in Behaving Monkey’. Alessandra Stella (since 1/2018)
- ‘Cooperative population signatures in massively parallel spike trains’. Emanuele Lucrezia (since 6/2017)
- ‘Neuronal activity during active vision’. Cristian Joana (since 9/2016)
- ‘From spiking activity to whole brain dynamics in active vision using MEG’. Christian Kiefer (since 06/2016, Co-Supervision with Dr. J. Dammers)
- ‘Detection an Statistical Evaluation of Spike Patterns in Parallel Eelectrophysiological Recordings’. Pietro Quaglio (Dr. rer. nat., RWTH Aachen, Faculty I, 5/2015 - 7/2019)
- ‘Dependency of spike LFP relation on brain states’. Julia Sprenger (since 09/2015)
- ‘Identification of cell assembly activity on different spatial and temporal scales’. Carlos Canova (since 10/2014)
- ‘Cortical network dynamics during visually-guided motor behavior: Setup development and Preliminary analysis’. Marcel De Haan (Dr. rer. nat., RWTH Aachen, Faculty I, 5/2012 – 1/2018)
- ‘Management of Electrophysiological Data – Making complex experiments accessible to yourself and others’. Lyuba Zehl (Dr. rer. nat., RWTH Aachen, Faculty I, 10/2011 - 4/2017)
- ‘Statistical analysis tools for assessing the functional relevance of higher-order correlations in massively parallel spike trains’. Vahid Rostami (Dr. rer. nat., RWTH Aachen, Faculty I, 11/2012 - 3/2017)
- ‚Entwicklung axonaler Dioden zur Untersuchung des gerichteten Informationsflusses in neuronalen Strukturen‘. Jonas Albers (member of PhD commission, 10/2016)
- ‘Statistical evaluation of synchrony and synchrony propagation in massively parallel spike trains’. Emiliano Torre (Dr. rer. nat., RWTH Aachen, Faculty I, 8/2012 - 4/2016)
- ‘Identifikation of Neuromagnetic Responses for Real-Time Analysis in Magnetoencephalography’. Lukas Breuer (member of PhD commission, 10/2015)
- ‘Impact of top-down influence on visual processing during free viewing: multiscale analysis of multi-area massively parallel recordings of the visual pathway’. Richard Meyes (09/2013 – 10/2015)
- ‘Impact of top-down influence on visual processing during free viewing: multi-scale analysis of multi-area massively parallel recordings of the visual pathway’. Serge Strokov (8/2012 – 11/2013)
- ’Interpreting the local field potential as a reflection of cooperative neuronal spiking dynamics’, Michael Denker (Dr. rer. nat., Inst. Biology, Freie Univ. Berlin, 10/2009)
- ’Intrinsic and functional aspects of neuronal synchrony in primary visual cortex', Denise Berger (Dr. rer. nat, Inst. Biology, Freie Univ. Berlin, 7/2009)
- ’Identification of Assembly-Activity in Massively Parallel Spike Trains’, Benjamin Staude (Dr. rer. nat., Inst. Biology, Albert-Ludwigs Univ. Freiburg; 6/2008)
- ’Manipulations of spike trains and their impact on synchrony analysis’, Antonio Pazienti (Dr. rer. nat., Institut für Physik, Univ. Potsdam, 3/2008)
- ’The neuronal code: Developments of tools and hypothesis for understanding the role of synchronization of neuronal activity’, Gordon Pipa (Dr. rer. nat., Inst. Informatics, Technical Univ. Berlin, 8/2006; 3rd reviewer)
- ’Influence on stimulus timing on synchronization’, Ulrich Kallenbach, (Dr. med., J-W Goethe Univ. Frankfurt/M; with Dr. M. Munk, 6/2006)

- ’Electrophysiological multichannel recordings in the antennal lobe of the honeybee’, Robert Finke (Dr. rer. nat, Inst. Biology, Freie Univ. Berlin, 10/2005; with Prof. R. Menzel)

11.2 Supervision of Bachelor-/Master-/Diploma Theses

- ‘Comparison of statistical methods for spatio-temporal patterns detection in multivariate point processes: an application to neuroscience’, Alessandra Stella, MSc (Stochastics and Data Science), Univ. of Turin, Italy, 12/2017
- ‚Latency ordering of spike responses‘, Emanuele Lucrezia, MSc (mathematics), Univ. of Turin, Italy, 5/2016
- ‘Erhebung und Analyse von Nutzeranforderungen an einen Editor für Metadaten in den Neurowissenschaften’, Jana Pick, BSc (Mathematical technical software engineer), Univ. of Applied Sciences Aachen, 09/2016
- ‘Comparsion of higher-order spike correlation methods’, Pietro Quaglio, MSc (mathematics), Univ. of Turin, Italy, 4/2015
- ‘Spatial Dependence of the Spike-Related Component of the Local Field Potential in Motor Cortex’, Julia Sprenger, MSc (physics), RWTH Aachen Univ., 11/2014
- ’Statistics of eye movements in free viewing monkeys’, D. Berger, MSc (bioinformatics), Freie Univ, 11/2005
- ‘Erhebung und Analyse von Nutzeranforderungen an einen Editor für Metadaten in den Neurowissenschaften’, Jana Pick, BSc (Mathematical technical software engineer), Univ of Applied Sciences Aachen, 09/2016
- ‘Entwicklung und Evaluation einer Methode zur Zuordnung der Neurone in multiplen elektrophysiologischen Ableitungen’, Christoph Gollan, BSc (scientific programming), Univ of Applied Sciences Aachen, 08/2015
- ’Trial shuffling as a mechanism to uncover correlation structures’, Martin Eisentraut, BSc (bioinformatics), Freie Univ, 8/2006
- ’Influence of stochastic properties of multiple-parallel point processes on the firing precision of model neurons’, M. Schultze-Kraft, BSc (bioinformatics), Freie Univ, Berlin, 8/2006
- ’Analysis of sparsely connected random networks networks with embedded synfire chains by the Unitary Events method’, Saskia Helbling, BSc (bioinformatics), Freie Univ, Berlin, 8/2005
- ’Modeling of extracelullar tetrode recordings’, Felix Franke, BSc (bioinformatics), Free Univ, Berlin, 7/2005
- ’Einfluss von Ratenkovariation auf die Signifikanzschätzung von Spike Korrelationen’, F. - P. Hoffmann, BSc (bioinformatics), Freie Univ, Berlin, 9/2004
- ’Correlation analysis of simultaneously recorded spike trains: linking spatial information to correlation structure’, D. Berger, BSc (bioinformatics), Freie Univ, Berlin, 10/2003
- ’Influence on spike sorting errors on spike correlation measures’, J. Weingarten, BSc (bioinformatics), Freie Univ, Berlin, 10/2003
- ‘Statistical assessment and neuronal composition of active synfire shains’, Carlos Canova, Diploma (physics), Univ Tübingen, 9/2014
- ’Latenzvariabilität von synchronen Spike-Ereignissen in kortikalen Netzwerken’, M. Buschermöhle, Diploma (physics), MPI für Strömungsforschung and Univ of Göttingen (with Dr. M. Diesmann), 5/2003
- ’Analysis of higher-order coincident activity in multiple parallel processes’, G. Schneider, Diploma (mathematics), MPI for Brain Research and J-W Goethe Univ, Frankfurt/M, 6/2002
- ’Entwicklung und Untersuchung einer nicht-parametrischen Methode zur Schätzung der Signifikanz zeitlich koordinierter Spike-Aktivität’, G. Pipa, Diploma (physics), MPI for Brain Research and J-W Goethe Univ, Frankfurt/M, 12/2001
- ’Untersuchung des übertragungsverhaltens kortikaler Neurone’, K. Virow, Diploma (physics), MPI for Brain Research and J-W Goethe Univ, Frankfurt/M, 1/2001
- ’Interaction of synchronous spiking and ongoing activity in cortical networks - a model study’, M. Mohns, Diploma (biology), Albert-Ludwigs Univ, Freiburg, (with M. Diesmann), 8/2000

12 Teaching

12.1 Schools

April 2019	Lectures: ‘Correlation Analysis of Parallel Spike Trains’, G-node Advanced Neural Data Analysis Course (ANDA 2019), Haus Overbach, Jülich-Barmen, Germany
March 2018	Lectures: ‘Correlation Analysis of Parallel Spike Trains’, G-node Advanced Neural Data Analysis Course (ANDA 2018), Haus Overbach, Jülich-Barmen, Germany
Sept 2017	‘Towards reproducible analysis workflows and the role of the Neuroinformatics Platform’, Young Researcher Event, Biocampus, Geneva, Switzerland
July 2017	Lectures: ‘Analysis and interpretation of massively parallel neuronal data I + II’, ‘Reproducible Data Analysis’, OCNC Computational Neuroscience Summer School, Okinawa, Japan
May 2017	Lecture: ‘Analysis and Interpretation of the Dynamics of Parallel Spiking Activities’, Neurosur 2017 – Neurobiologia de Conciencia, Univ de Chile, Santiago, Chile
March 2017	Lectures: ‘Correlation Analysis of Parallel Spike Trains I – IV’, G-node Advanced Neural Data Analysis Course (ANDA 2017), Haus Overbach, Jülich-Barmen, Germany
Nov 2015	Lecture: `Multi-scale neuronal recordings and analysis of network interaction`, University of Chile, Santiago, Chile
Aug 2015	Tutorial: ‘Correlation Analysis of Parallel Spike Data’, Workshop ‘Correlation Analysis of Parallel Spike Trains’, 2nd HBP School on Future Computing Obergurgl, Austria
July 2015	Intern. ‘Berkeley course in mining and analysis of neuroscience data’, UC Berkeley, USA
Nov 2014	Lecture: ‘Spike Synchrony: From Cross-Correlations to Higher Order Analysis Methods’, SPP 1665 Analytical Workshop: Analysis and Management of Electrophysiological Activity Data, Research Center Jülich, Germany
Sep 2014	Tutorial: ‘Correlation Analysis of Parallel Spike Data’, Workshop ‘Correlation Analysis of Parallel Spike Trains’,1st HBP School, Alpbach, Austria
Oct 2013	Tutorial: ‘Surrogate Methods for Significance of Correlations under In Vivo Conditions’, Workshop ’Analysis of Electrophysiological Signals: Theoretical and practical approaches’, San Pedro de Atacama, Chile
Oct 2013	Intern. BCCN/NWG - Summer School on ’Analysis and Models in Neurophysiology’, Albrecht-Ludwigs Univ., Freiburg, Germany
Jul 2013	Intern. ‘Berkeley course in mining and analysis of neuroscience data’, UC Berkeley, USA
Oct 2012	Intern. BCCN/NWG - Summer School on ’Analysis and Models in Neurophysiology’, Albrecht-Ludwigs Univ., Freiburg, Germany
Mar 2012	G-Node Winter Course in Neural Data Analysis, Munich, Germany
Dec 2011	Cape Town School of Advanced and Computational Neurosciences, Cape Town, South Africa
Oct 2011	Intern. BCCN/NWG - Summer School on ’Analysis and Models in Neurophysiology’, Albrecht-Ludwigs Univ., Freiburg, Germany
Jul 2011	Berkeley course in mining and modeling of neuroscience data, UC Berkeley, USA
Jul 2011	Tutorial 'Analysis of parallel spike trains', satellite at Computational Neuroscience Meeting CNS*11, Stockholm, Sweden
Oct 2010	Intern. BCCN/NWG - Summer School on ’Analysis and Models in Neurophysiology’, Albrecht-Ludwigs Univ., Freiburg, Germany
Mar 2010	Intern. G-Node Winter Course in Neural Data Analysis, Mar 1-5, 2010 in Munich, Germany
Jan 2010	Intern. Latin American Summer School in Computational Neuroscience and Biomedical Applications, Valparaíso, Chile
Oct 2009	Intern. BCCN/NWG - Summer School on ’Analysis and Models in Neurophysiology’,

	Albrecht-Ludwigs Univ., Freiburg, Germany
Oct 2008	Intern. BCCN/NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Dec 2007	Intern. School on Neural Nets ("E.R. Caianiello") on 'Dynamic Brain', Erice, Sicily, Italy
Oct 2007	Intern. BCCN/NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Oct 2006	Intern. BCCN/NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Oct 2005	Intern. BCCN/NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Jan 2005	Intern. Summer School on 'Advanced Scientific Computing', Drakensberge, South Africa
Oct 2004	Intern. NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Mar 2004	Interdisciplinary College 2004, Günne, Germany
Oct 2003	Intern. NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Dec 2001	Intern. FENS Winter-School, Workshop on 'Analysis of Multiple Parallel Recordings', Kitzbühel, Austria
Sep 2001	NWG Summer School on 'Neural Computation', Ruhr-Univ Bochum, Germany
Sep 2000	NWG Summer School on 'Neural Computation', Ruhr-Univ Bochum, Germany

12.2 Osaka University

WS 2014/15	Lecture series 'Introduction to Computational Neuroscience' (with Profs Fujita, Tamura, Dr. Ito)

12.2 At RWTH Aachen

WS 2019/20	Exercise (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
WS 2019/20	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
SS 2019	Seminar "Cortical Structure and Function"	(2 SWS)
WS 2018/19	Exercise (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
WS 2018/19	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
SS 2018	Seminar "Cortical Structure and Function"	(2 SWS)
WS 2017/18	Exercise (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
WS 2017/18	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
SS 2017	Introduction to Python	(2 SWS)
SS 2017	Seminar "Cortical Structure and Function"	(2 SWS)
WS 2016/17	Exercise (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
WS 2016/17	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
SS 2016	Seminar 'Cortical Structure and function'	(2 SWS)
SS 2016	Introduction to Python	(2 SWS)
WS 2015/16	Exercises (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
WS 2015/16	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
SS 2015	Seminar 'Cortical Structure and function'	(2 SWS)
WS 2014/15	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
WS 2014/15	Exercises (Python) 'Introduction to Computational Neuroscience'	(2 SWS)

SS 2014	Seminar 'Cortical Structure and function'	(2 SWS)
WS 2013/14	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
WS 2013/14	Exercises (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
SS 2013	Lecture 'Cortical Structure and Function – Vision, Action, Interaction'	(2 SWS)
WS 2012/13	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
WS 2012/13	Exercises (Python) 'Introduction to Computational Neuroscience'	(2 SWS)
SS 2012	Seminar 'Cortical Structure and function'	(2 SWS)
WS 2011/12	Lecture 'Introduction to Computational Neuroscience'	(1 SWS)
WS 2011/12	Lab course 'Introduction to Scientific Programming'	(2 SWS)

12.3 Free University Berlin

SS 2006	1. Practical Course 'Neuroinformatics: Analysis of neuronal data'	(5 SWS)
	2. Practical Course 'Experiments, Analysis and Simulations: from data recording to models in experimental neurobiology	(5 SWS)
	3. Seminar 'Selected Topics in Computational Neuroscience'	(2 SWS)
	4. Seminar 'Journal Club Theoretical Neuroscience'	(2 SWS)
WS 2005/06	1. Lecture with accompanying exercises: 'Introduction to Computational Neuroscience and Neuroinformatics'	(2+3 SWS)
	2. Seminar 'Selected Topics in Computational Neuroscience'	(2 SWS)
	3. Seminar 'Journal Club Theoretical Neuroscience'	(1 SWS)
	4. Lecture 'Animalische Physiologie für Bioinformatiker'	(1 SWS)
SS 2005	1. Seminar 'Concepts in Neuroinformatics: Functional Connectivity'	(2 SWS)
	2. Practical Course 'Experiments, Analysis and Simulations: from data recording to models in experimental neurobiology'	(5 SWS)
	3. Practical Course 'Softwarepraktikum: Neuroinformatik - Analyse neuronaler Daten' (4 weeks full time)	
WS 2004/05	1. Seminar 'Concepts in Neuroinformatics: Neuronal Coding'	(2 SWS)
	2. Lecture 'Animalische Physiologie für Bioinformatiker'	(1 SWS)
SS 2004	1. Lecture with accompanying exercises: 'Introduction to Computational Neuroscience and Neuroinformatics'	(2+3 SWS)
	2. Practical Course 'Experiments, Analysis and Simulations: from data recording to models in experimental neurobiology'	(5 SWS)
	3. Ringvorlesung 'New Concepts and Techniques in the Neuroscience'	(1 SWS)
WS 2003/04	1. Seminar 'Concepts in Neuroinformatics: Correlation analysis of neuronal activity'	(2 SWS)
	2. Lecture 'Animalische Physiologie für Bioinformatiker'	(1 SWS)
SS 2003	1. Lecture with accompanying exercises: 'Introduction to Computational Neuroscience and Neuroinformatics'	(2+3 SWS)
	2. Practical Course 'Experiments, Analysis and Simulations: from data recording to models in experimental neurobiology'	(5 SWS)
	3. Ringvorlesung 'New Concepts and Techniques in the Neuroscience'	(1 SWS)

12.4 Albrecht-Ludwigs University Freiburg

WS 2006/07	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Brain and Cognition: Neuronal principles of learning'	(1 SWS)
SS 2006	Seminar 'Brain and Cognition'	(1 SWS)

WS 2005/06	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Brain and Cognition: Neuronal principles of learning'	(1 SWS)
SS 2005	Seminar 'Brain and Cognition'	(1 SWS)
WS 2004/05	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Brain and Cognition: Neuronal principles of learning'	(1 SWS)
SS 2004	Seminar 'Brain and Cognition'	(1 SWS)
WS 2003/2004	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Synaptic Plasticity: Mechanisms and Cognition'	(1 SWS)
SS 2003	Seminar 'Brain and Cognition'	(1 SWS)
WS 2002/2003	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Synaptic Plasticity: Mechanisms and Cognition'	(1 SWS)
SS 2002	Seminar 'Synaptic Plasticity: Mechanisms and Cognition'	(1 SWS)
WS 2001/2002	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'Neurophilosophy'	(1 SWS)
SS 2001	Seminar 'Brain and Cognition: Precision and Variability of Neuronal Activity and Behaviour'	(1SWS)
WS 2000/2001	1. Lab course 'Measurements and Analysis of Neuronal Activity - A Technical Introduction'	(5 SWS)
	2. Seminar 'How does the brain learn?'	(1 SWS)
SS 2000	Seminar 'Brain and Cognition: Precision and Variability of Neuronal Activity and Behaviour'	(1 SWS)
WS 1999/2000	1. Lab course 'Compact Course in Measuring Techniques in Neurobiology'	(3 SWS)
	2. Seminar 'How smart is a single neuron?'	(1 SWS)
SS 1999	Lab course 'Compact Course in Measuring Techniques in Neurobiology'	(3 SWS)

13 Invited Talks

Oct 2019	"Characterization and Interpretation of Spatio-temporal Spike Patterns in Cortex", Workshop at Kyoto University, Japan
Oct 2019	"Data Management Workflows for Data Analysis in Neuroscience", Workshop at Kyoto University, Japan
Oct 2019	"Questions to Vision for Action Data", 15th Vision for Action Workshop, INT, CNRS, Marseille, France
Sep 2019	"Methods and Tools for Model Validation", Satellite Workshop 'Brain Circuit Insight: From brain circuit models to brain circuit insights', Bernstein Conference, Berlin, Germany
Sep 2019	"Spatio-Temporal Cortical Spike Patterns in Motor Cortex", Active Vision Collaboration, Okinawa Institute of Science and Technology (OIST), Okinawa, Japan

Jun 2019	“Neurodynamics on Microscopic and Mesoscopic Scales”, SPP 1665 Colloquium, Hamburg
Feb 2019	“Towards Reproducibility and Open Science for Data Management and Data Analysis”, Neurological Computer-Simulation Workshop, MECS, Lüneburg
Feb 2019	“Fine Temporal Spike Coordination in Relation to Behavior”, Bernstein Colloquium, Bernstein Center Freiburg, Germany
Jan 2019	“Spatio-temporal cortical activity in relation to behavior”, Neuro Colloquium, Philipps University Marburg
Jan 2019	“Spatio-temporal spike patterns in motor cortex: Method, Application and Software”, Vision4Action Collaboration, University of Chile, Santiago, Chile
Oct 2018	“Behavior related precise spike patterns in motor cortex “, Bar-Ilan University, Israel
Sep 2018	“Zusammensetzung von neuronalen Aktivitäten und Verhalten“, Visit of Prof. Dr. Gabriele Gramelsberger, Research Centre Jülich, Germany
May 2018	“Reproducible collaborative workflow”, Helmholtz Metadata and Knowledge Platform, Helmholtz Association Berlin Office, Berlin, Germany
Apr 2018	“Spatial and temporal cortical activity patterns related to behavior, Neurocolloquium, Eberhard Karls University Tübingen, Germany
Feb 2018	‘Spikemuster in Bezug zu Verhalten’, Psychiatrie: Biologie, Psyche, Verantwortung “Die spannendste Disziplin”, Symposium for Prof. Dr. Dr. Frank Schneider, Hotel Quellenhof, Aachen
Nov 2017	‘Digitization of reproducible data analysis workflows’, Okinawa Institute of Technology, Okinawa, Japan
Oct 2017	‘Multi-Scale Multi-Area Interaction in Cortical Networks’, Helmholtz Analytics Framework Kick-Off, Forschungszentrum Juelich, Juelich
Oct 2017	‘Identification of cell assemblies in massively parallel spike recordings’, Workshop “From Neurons to Behavior – Computing across Scales”, BCCN and ICCN, Humboldt University, Berlin
Sep 2017	‘Analysis of massively parallel spike trains for higher-order correlations’, Blue Brain Project, Campus Biotech, Geneva, Switzerland
July 2017	‘Breaking the Complexity Barrier of Analysis by Reproducible Workflows’, CNS 2017, Workshop “Theoretical Neuroscience in the Human Brain Project”, University of Antwerp, Belgium
	‘Spatial and temporal LFP-LFP and spike-LFP relationships’, CNS2017, Workshop on "Principles and applications of extracellular potentials: experiments and theory“, Univ of Antwerp, Belgium
	‘Analysis of massively parallel spike data for higher-order correlations’, CNS 2017, Workshop ‘Recent Methods and Analyses in Neuronal Population Recordings’, University of Antwerp, Antwerp, Belgium
June 2017	‘Behavior related network coordination in monkey motor cortex on multiple scales’, Instituts-seminar, Institut für klin. Neurowissenschaften & med. Psychologie, HHU Düsseldorf
May 2017	‘Bridging Scales’, SAND 8, Session: Emerging Challenges of Brain Science Data, Univ Pittsburgh, Pittsburgh, USA
May 2017	‘Methods for Detecting Higher-Order Correlations in Massively Parallel Spike Trains Analysis’, invited seminar, Hatsoupolos Lab, Univ of Chicago, USA
Mar 2017	`Analysis of massively parallel neural data`, GTPN Course Göttingen, German Primate Center, Göttingen, Germany
Mar 2017	`Scaling up spatio-temporal pattern detection to massively parallel spike trains`, Workshop ‘From Neural Timing To Mental Experience’, Ein Gedi, Israel
Jan 2017	Causative Mechanisms of Mesoscopic Activity Patterns in Auditory Category Discrimination, `SPP 1665: Resolving and manipulating neuronal networks in the mammalian brain – Kickoff meeting` Hamburg, Germany
Jan 2017	`Report on WP 4.5, part 1 Linking Model Activity And Function to Experimental data`SP4 annual meeting, EITN, Paris, France

Dec 2016	`Framework for the Analysis of Activity Data: Concepts and use Cases` 3rd Brain Initiative Meeting, Bethesda, Washington, USA.
Oct 2016	`Present and Future Role in the HBP`, SP3-SP4 Meeting, HBP Summit, EITN; Paris, France
Oct 2016	`Free Viewing in Monkeys – Relating Neuronal Activity and Eye Movements`, International Vision over Vision Workshop, Osaka University, Japan.
Aug 2016	`Behavioral related synchronous spike patterns in macaque motor cortex during an instructed-delay reach-to-grasp task`, Neural Coding Workshop, Cologne, Germany
July 2016	`Analysis of large-scale recordings of neural activity in vivo and in silico`, Intern. Workshop 'Introduction to the HBP Collaboratory', Copenhagen, Denmark
June 2016	`Progress and Challenges in Analysis of Massively Parallel Spike Data`, MONA2, Waikoloa, Hawaii
June 2016	`Vision for Action Experiment`, CDP 4 Kickoff Meeting, EIN, Paris, France
June 2016	'The Electrophysiology Analysis Toolkit Elephant', CDP4 Kickoff Meeting, EITN, Paris, France
Mar 2016	'Causative mechanisms of mesoscopic activity patterns in auditory category discrimination', SPP 1665 Review Meeting, Frankfurt, Germany
Feb 2016	'Towards Reproducible Analysis of Electrophysiological Data', Neuro Data Analysis Workshop, Kyoto University, Kyoto, Japan
Feb 2016	'Multi-Scale Neuron Recordings and Analysis of Network Interaction', Neuro Data Analysis Workshop, Kyoto University, Kyoto, Japan
Nov 2015	'Relating Large Scale Neuronal Activity to Behavior: Aspects of Statistics, Analysis and Reproducibility', Conversations in Neuromedicine, BNI Seminar Series, Santiago, Chile
Oct 2015	'Detection of Cell Assembly Activity - A Statistical Challenge', HeiNEC 2015 - Heidelberg Neuronal Ensemble Conference (of SFB 1134 Functional Ensembles), Heidelberg, Germany
Sept 2015	'Reproducibility in the Neurosciences: Workflows, Provenance Tracking and Data Sharing', Satellite Workshop, Bernstein Conference 2015, Heidelberg, Germany
Sept 2015	'Reproduzierbarkeit der Datenanalyse in den Neurowissenschaften', DFG Fachkollegium Neurowissenschaften, Bonn, Germany
Aug 2015	'Challenges in Analysis of Massively Parallel Spike Data', CCNS Opening Workshop, SAMSI Hamner Conference Center Auditorium, Durham, USA
Aug 2015	'Analysis of Network Activity in Experimental and Simulated Data', 2nd HBP School on Future Computing, Obergurgl, Austria
June 2015	'The mesoscopic spatial organization of beta oscillations in macaque motor cortex and its relation to power', RIKEN Brain Science Institute, Wako-Shi, Japan
June 2015	'Experience of ensuring reproducibility when collaborating with experimentalists', Workshop 'Building a Neuroscience Community: community modelling and data repositories', Geneva, Switzerland
May 2015	'Approaches for accessing coordinated neuronal processing during natural behavior', Occam 2015 – From single neurons to large-scale models of cognition, Osnabrück, Germany
May 2015	'Relating patterns of cortical LFP activity to beta power', CINPLA Workshop on Inferring network activity from LFPs, Oslo, Norway
Apr 2015	'Methods and tools for accessing the spatio-temporal organization of cortical processing during natural behavior', Jülich – Torino Workshop on Computational Neurosciences, Univ of Torino, Torino, Italy
Mar 2015	'Correlation structure of neuronal activity', SMHB General Assembly Meeting, Jülich Research Centre, Jülich
Mar 2015	'Towards Reproducible Analysis of Complex Electrophysiological Experiments', Community Session 'Reproducilibity in the neurosciences', Univ Göttingen, Göttingen
Mar 2015	'Time Series Analysis, Population Dynamics and the Role of Elephant', Reproducilibity Workshop, HBP/EPFL, Biocampus, Geneva, Switzerland

Feb 2015	'Analysis of Concerted Neuronal Activity During Complex Behavior', Emerging Group CONNECT, Biozentrum Köln
Dec 2014	'Statistics and Workflows for the Analysis of Concerted Neuronal Activity During Complex Behavior', Intern. Symposium on “Active Vision in Natural Environments”, CiNet, Osaka University, Japan
Oct 2014	'Towards reproducible data analysis of massively parallel neuronal data during complex behavior', 5th Fifth Annual Meeting of the GDR Multielectrodes, Gif sur Yvette, France (keynote lecture)
Sept 2014	'Time-series analysis methods'. Focus Group: 'Time Series Analysis Software', 2nd HBP Summit, KIP, Heidelberg, Germany
July 2014	'Detection of assembly activity in massively parallel spike data: Workflow and statistics', BCCN Heidelberg-Mannheim, Heidelberg, Germany
July 2014	'Statistical methods for detection of assembly activity in massively parallel spike data', Carnegie Mellon University, Pittsburgh, USA
July 2014	'SPADE - Statistical Pattern Detection and Evaluation', 4th Vision for Action Workshop, Jülich Research Center, Germany
June 2014	'Statistical methods for detection of assembly activity in massively parallel spike data', AREADNE 2014 - Research in Encoding And Decoding of Neural Ensembles, Nomikos Conference Centre Santorini, Greece
June 2014	'Statistical Neuroscience Lab', 3rd Active Vision Workshop, Jülich, Germany
June 2014	'Accessing the spatio-temporal organization of cortical activity during complex behavior', Hertie Institute for Clinical Brain Research, Tübingen, Germany
Apr 2014	'Accessing the spatio-temporal organization of cortical activity during complex behavior', Department of Psychology and Neuroscience, Maastricht Univ, NL
Mar 2014	'Obtaining and analyzing massively parallel spike data in relation to behavior', 4th BrainScaleS plenary meeting, Manchester, UK
Feb 2014	'The Human Brain Project - Scientific goals, Organization, Our role', Center for Information and Neuronal Networks, Osaka University, Japan
Feb 2014	'Accessing the spatio-temporal organization of cortical activity during complex behavior', RIKEN BSI, Wako-Shi, Japan
Jan 2014	'Spatio-temporal organization of cortical processing during complex behavior', Center for Information and Neuronal Networks, Osaka University, Japan
Nov 2013	'Human Brain Project - Scientific goals, Organization, Our role', Wissenswerte, Bremen
Oct 2013	'Assembly Detection in Massively Parallel Data and Population Measures, Workshop ' Analysis of Electrophysiological Signals: Theoretical and practical approaches', San Pedro de Atacama, Chile
Oct 2013	'Spike Train Statistics and Correlation Measures I. + II. ' BCF/NWG-Course: Analysis and Models in Neurophysiology, Freiburg , Germany
Jul 2013	'Correlation Analysis of Parallel Spike Trains I. - IV,' Berkeley Summer Course in Mining and Modeling of Neuroscience Data, UC Berkeley, USA
Jul 2013	'Spike Synchrony and Spike-LFP Locking in Monkey Primary Visual Cortex during Free Viewing of Natural Scenes', Workshop ‘Methods of System Identification in Sensory Systems’, CNS*13, Paris, France
Jul 2013	'Importance of calibrating statistical correlation methods in data analysis', Tutorial 'Managing complex workflows in neural simulation and data analysis', CNS*13, Paris, France
Jul 2013	'Statistical Methods for the Analysis of Multi-Channel Spike and LFP Data', Workshop Tool for the Analysis of Functional Data, Paris, France
Jul 2013	'Multi-Channel Spike Correlation Analysis', Tutorial 'Statistical Methods', INM Retreat 2013, Jülich Research Center, Jülich, Germany
Jul 2013	'Data-driven evaluation of functional correlations in (massively) parallel spike trains', Intern. Workshop on Brain-Inspired Computing, Cetraro, Italy

Jun 2013	'Statistical Evaluation of Synchronous Spike Patterns extracted by Frequent Item Set Mining', 'Modeling Neural Activity: Statistics, Dynamical Systems and Networks', Lihue, Hawaii, USA
Jun 2013	'Spatio-Temporal Correlation in Parallel Spike Trains: Model Predicitons and Analysis Approaches', HBP Data Analysis and Visualization Coordination Meeting, Leipzig, Germany
Jun 2013	'Frequent Itemset Mining based Detection of Synchronous Spike Events in Massively Parallel Spike Trains', 2nd Active Vision Workshop, Kyoto University, Kyoto, Japan
May 2013	'Spatio-Temporal Scales of Neuronal Interactions', Symposium S06, 11th Conference of the French Neuroscience Society, Lyon, France
Apr 2013	'Uncovering Spatio-Temporal Cortical Interaction: Current activities, Open problems', HBP Data Analysis –Visualization Coordination Meeting, Jülich, Germany
Apr 2013	'Spatio-Temporal Correlation in Parallel Spike Trains: Model Predicitons and Analysis Approaches', Human Brain Project Data Analysis – Visualization Coordination Meeting, Jülich, Germany
Jan 2013	'Relationship of spiking activity & synchrony to LFP', Workshop on “Modeling and Analysis of LFP”, Thon Hotel Ski, Norway
Jan 2013	'Effect of Spike Sorting Errors on Unitary Event Analysis', 2nd Vision for Action Workshop, Jülich, Germany
Jan 2013	'Dynamic Interactive Processing in the Biological Neuronal Network', SFB 917 - Seminar, RWTH Aachen Univ, Aachen, Germany
Nov 2012	'Effect of Spike Sorting Errors on Correlation Analysis', German-Japanese Project meeting, Jülich, Germany
Nov 2012	'Dynamics and Interaction in the Cortical Network', 7th Winter School IRTG 1328, RWTH Aachen, Germany
Nov 2012	'Interaction of Spike-Synchrony and the Local Field Potential', UCL London, United Kingdom
Oct 2012	'Data Driven Analysis of Spatio-Temporal Cortical Interaction GDR 2904 multi-electrodes', 3rd annual meeting Marseille, INT, France (keynote lecture)
Sept 2012	'Data Driven Analysis of Spatio-Temporal Cortical Interaction', 5th INCF Neuroinformatics Congress 2012, Munich, Germany (keynote lecture)
Aug 2012	'Detection and Interpretation of Cortical Spatial-Temporal Interaction', Schleiden, Germany
June 2012	'Reliable and Fast Detection of Synchronously Firing Groups of Neurons in Massively Parallel Spike Trains', BIOCOMP 2012, Vietri sul Mare, Italy
June 2012	'Calibration and Testing of Spike Correlation Methods', INCF Validation Workshop, INCF Secretariat, Karolinska Institute, Stockholm Sweden
June 2012	'Multiple Approaches to Higher-Order Spike Patterns', BrainScaleS workshop on 'Workflow Design for Complex Analyses of Multi-Electrode Electrophysiological Data', INT, Marseille, France
June 2012	'Worms and Braids', 1st Vision for Action Workshop, Marseille, France
May 2012	'Approaches for Deriving Correlation Structures in Massively Parallel Spike Data Biology and Physics of Information Processing', Nordita, Stockholm, Sweden
May 2012	'Approaches for Correlation Analysis of Massively Parallel Spike Data', RIKEN Brain Science Institute, Wako-Shi, Japan
May 2012	'Introduction to Spike Train Analysis Kickoff Workshop ’Multi-scale analysis of the visual pathway', Osaka, Japan
May 2012	'Challenges for workflows in complex electrophysiology projects Kickoff Workshop', Japan-German collaboration project, Osaka
Mar 2012	'Detection of Spatio-Temporal Correlations in Massively Parallel Spike Data Computational Neuroscience ', BCCN, LMU, München
Mar 2012	'Detection of Cortical Spatio-Temporal Interaction 4th G-Node Winter Course in Neural Data Analysis', LMU München

Jan 2012	'Analysis of Cooperative Network Processes in Vivo', Zoologisches Kolloquium, RWTH Aachen University, Aachen
Jan 2012	'Detection and identification of cortical spatio-temporal interaction', MPI für Dynamik und Selbstorganisation - Bernstein Center for Computational Neuroscience /Bernstein Focus Neurotechnology, Göttingen
Jan 2012	'Surrogates for Spike Correlation Analysis', BCCN/BFNT Tutorial, MPI for Dynamics and Self-Organization Göttingen, Germany
Jan 2012	'Detection and identification of cortical spatio-temporal interaction', MPI für Dynamik und Selbstorganisation - Bernstein Center for Computational Neuroscience /Bernstein Focus Neurotechnology, Göttingen
Dec 2011	'Analysis of Brain Activity', Cape Town School of Advanced and Computational Neurosciences, Cape Town, South Africa
Nov 2011	'Signatures of spiking neural assemblies in the LFP', Minisymposium 'Neural Phase Coding and Spike-Field Coherence' (Nr 314) at Society for Neuroscience Meeting, Washington DC, USA
Oct 2011	'Spike train statistics and correlation measures', Intern. BCCN/NWG - Summer School on 'Analysis and Models in Neurophysiology', Albrecht-Ludwigs Univ., Freiburg, Germany
Oct 2011	'Perspectives - PhD and beyond', PhD-Symposium, Bernstein Conference 2011, Freiburg, Germany
Sept 2011	'Assembly detection in massively parallel spike data', Workshop 'Spatio-temporal dynamics of massively parallel neuronal data in the cerebral cortex: Theory, analysis and experiments', Freie Univ Berlin, Germany
Sept 2011	'Analysis and Modeling of Brain Dynamics', Joint-workshop 'Forschungszentrum Jülich - DNZE', Bonn, Germany
July 2011	'Statistical approaches for correlation analysis', Berkeley summer course 'Mining and modeling of neuroscience data', Berkeley, USA
July 2011	'Unitary Event Analysis', Tutorial 'Analysis of parallel spike trains', satellite at Computational Neuroscience Meeting CNS*11, Stockholm, Sweden
June 2011	'Scales of neuronal data and the problem of interaction', Mini-symposium on 'Statistical methods in computational neuroscience', 8th European Conference on Mathematical and Theoretical Biology 2011, Cracow, Poland
Nov 2010	'Signatures of Spiking Neuronal Assemblies in the Local Field Potential', 9th Intern. Workshop 'Neural Coding 2010', Limassol, Cyprus
Sept 2010	'Detection and interpretation of coordinated network activity', Neuro2010 (Joint Conference of Japan Neurosci Soc, Jap Soc for Neurochem, Jap Neural Network Soc), Symposium 'Methods for analyzing neuronal signals', Kobe, Japan
Sept 2010	'Reflections of Assembly Activity in the Local Field Potential', Workshop on 'Spatio-temporal neuronal computation', Kyoto Univ, Kyoto, Japan
Sept 2010	'In search for correlation in noisy and non-stationary multi-channel spike trains', Intern. Workshop 'Neural data analysis: Learning from Other Disciplines', Newcastle University, Newcastle, UK
Aug 2010	'The Local Field Potential Reflects Surplus Spike Synchrony', Graduate School of Frontier Biosciences School of Engineering Science, Osaka University, Osaka, Japan
July 2010	'Selecting appropriate surrogate methods for spike correlation analysis', Annual Computational Neuroscience Meeting CNS*10, San Antonio, USA
June 2010	'Data driven correlation analysis of parallel spike trains: generation and choice of proper surrogates', workshop on 'Spike Metrics', Plymouth, UK
May 2010	'Signatures of Spiking Neuronal Assemblies in the Local Field Potential', Fifth Intern. Workshop Statistical Analysis of Neuronal Data (SAND5), Pittsburgh, USA (keynote speaker)
Mar 2010	'Generation and selection of proper surrogate data for correlation analysis', workshop on 'Modeling and data analysis in neuroscience', Ritsumeikan, Japan

Mar 2010	'Signatures of spiking neuronal assemblies in a mesoscopic signal', Bernstein Center for Computational Neuroscience, Munich, Germany
Jan 2010	'Techniques and tools for the correlation analysis of parallel spike data (I/II)', Latin American Summer School in Computational Neuroscience and Biomedical Applications, Valparaíso, Chile
Jan 2010	'Signatures of spiking neuronal assemblies in a mesoscopic signal', Latin American Summer School in Computational Neuroscience and Biomedical Applications, Valparaíso, Chile
Oct 2009	'Local Field Potentials Reflect Neuronal Assemblies', Max-Planck Institute for Biological Cybernetics, Tübingen, Germany
Oct 2009	'Local Field Potentials Reflect Neuronal Assemblies', Hertie-Institute for Clinical Brain Research and Center for Integrative Neuroscience, Tübingen, Germany
Oct 2009	'Identification of correlated spiking in massively parallel spike trains', Workshop of Network 'The Human Brain Model', Helmholtz Initiative on Systems Biology, Jülich, Germany
Sept 2009	'An accretion based data mining algorithm for assembly identification', The 32nd Annual Meeting of the Japan Neuroscience Society, Session ', Nagoya, Japan
Aug 2009	'Inferring size and temporal precision of correlated neuron activity from population measures'. 57th Session of the International Statistical Institute, Durban, South Africa
May 2009	'Complementary signatures of assembly activity: Excess spike synchrony and local field potential', International School of Neuroscience, Ruhr-University, Bochum, Germany
May 2009	'Local Field Potentials Reflect Neuronal Assemblies', Second bilateral German-Japanese Workshop Computational and Systems Neuroscience, Berlin, Germany
Apr 2009	'Identification of Neurons Participating in Cell Assemblies', IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Taipei, Taiwan; Session: 'Signal Processing for Neural Spike Trains'
Jan 2009	'Detection and Identification of Cell Assemblies in Neuronal Population Activity', Kavli Institute for Systems Neuroscience and Centre for the Biology of Memory, Trondheim, Norway
Jan 2009	'Complementary Signatures of Assembly Activity: Excess Spike Synchrony and Local Field Potential', intern. workshop on: 'Modelling and Interpretation of Extracellular Field Potentials', Ski, Norway
Dec 2008	'Identification of assembly activity by simultaneous spike trains and local field potential', NIPS workshop on 'Statistical analysis and modeling of response dependencies in neural populations', Whistler, Canada
Dec 2008	'Local Field Potential Reflects Active Neuronal Assemblies', Department of Physics, Kyoto University, Kyoto, Japan
Dec 2008	'Identifying Assemblies via Parallel Spike Trains and Local Field Potential', Faculty of Computer Science and Engineering, Kyoto Sangyo University, Kyoto, Japan
Sep 2008	'Identification of Higher-Order Synchrony', Seminar 'Adaptive and Neural Computation', School of Informatics, Univ of Edinburgh, UK
Aug 2008	'Detecting higher-order synchrony in massively parallel spike trains', Workshop on 'Spatio-temporal patterns and synfire chain', Newcastle Univ, Newcastle, UK
Jul 2008	'Detection and Interpretation of Coordinated Neuronal Activity', Centre for Interactive Neuroscience, Tübingen, Germany
Jun 2008	'Detection and Interpretation of Cortical Interaction', RWTH, Aachen, Germany
Jun 2008	'Coordinated neuronal activity in monkey visual cortex during free viewing', Status meeting Helmholtz Alliance on Systems Biology, Potsdam, Germany
Jun 2008	'Coordinated neural activity in monkey visual cortex during free viewing', Bernstein Center for Computational Neuroscience, Freiburg, Germany
Mar 2008	'Coordinated neuronal activity in visual cortex of monkey freely viewing natural scenes', 4th Status Conference 'Dynamics and Adaptivity of neuronal systems', Volkswagen Foundation, Tübingen, Germany

Mar 2008	'Neuronal coordination in visual cortex of freely viewing Monkey', BCCN and Free Univ, Inst. Biology, Berlin, Germany
Mar 2008	'Neuronal coordination in visual cortex of freely viewing monkey', Hertie Inst. for Clinical Brain Research, Dept. Cognitive Neurology, Tübingen, Germany
Mar 2008	'Correlation Analysis of Massively Parallel Spike Trains', RIKEN-CARMEN Joint Workshop on 'Developing Web Services for Neurophysiological Data', Wako-Shi, Japan
Dec 2007	'Detection of higher-order correlations in massively parallel spike trains', Intern. School on Neural Nets "E.R. Caianiello", Erice, Italy
Dec 2007	'Relation of Spiking Activity to Local Field Potential', Intern. School on Neural Nets "E.R. Caianiello", Erice, Italy
Dec 2007	'Spike-LFP correlation in free viewing monkey', Dept. Modelling of Cognitive Processes, Technical University Berlin, Germany
Nov 2007	'Detection of coordinated network activity in massively parallel spike trains', Redwood Center for Computational Neuroscience, Berkeley, USA
Sep 2007	'Effectiveness of dithering to destroy spike coincidences', Neuro2007 - 30th meeting of the Japan Neuroscience Society, Yokohama, Japan
Aug 2007	''Signatures of neuronal interaction in parallel spike trains and their relation to the local field potential' Topical Problems of Biophotonics 2007, Workshop Neuroimaging and Neurodynamics, Nizhny Novgorod – Moskow - Nizhny Novgorod, Russia
Jul 2007	''Detection of coordinated network activity in multiple parallel spike trains', Neuro-Computing meeting of the electrical engineering society of Japan, Kyoto, Japan
Apr 2007	'Detection and interpretation of cortical interaction', Workshop 'Systems Biology of the Human Brain', Jülich, Germany
Jan 2007	'Unitary Event Analysis', Spike Train Metrics Workshop, Univ. of Plymouth, Plymouth, UK
Nov 2006	'Identification of spatio-temporal interaction in the visual cortex', Nordic Network Meeting on Computational Neuroscience and Neuroinformatics, Nordita, Copenhagen
Oct 2006	'Spatio-Temporal Scales of Cortical Interaction', Workshop 'Dynamical Modelling and Data Analysis of Cortical Networks', Ulm Univ, Ulm, Germany
Sep 2006	'Unitary Event Analysis', UK Spike Train Analysis Workshop, Newcastle Univ, Newcastle upon Tyne, UK
Sep 2006	'Phase Synchronization between LFP and Spiking Activity in Motor Cortex during Motor Preparation', School of Biology, Univ of Newcastle, Newcastle upon Tyne, UK
Jul 2006	'Detection and Interpretation of Cortical Interaction', Sir James Spence Inst, Univ of Newcastle, Newcastle upon Tyne, UK
Apr 2006	''Analysis and Interpretation of Cortical Network Dynamics', Humboldt Univ, Berlin, Germany
Feb 2006	'Detection and Interpretation of Cortical Network Interaction', Norwegian Univ of Live Sciences, Aas, Norway
Jan 2006	'Analyse und Interpretation kortikaler Netzwerkdynamik', Univ of Bern, Switzerland
Nov 2005	'Coordinated Spiking Activity in Multiple Parallel Processes', Inst für Chemie und Biologie des Meeres, Univ Oldenburg, Germany
Nov 2005	'Analysis and Identification of Cortical Cell Assemblies', Intern. Graduate School for Neurosensory Science and Systems, Univ Oldenburg, Germany
Oct 2005	'Effect of Cross-Trial Non-Stationarity on Joint-Spike Events', 1st Bernstein Symposium for Computational Neuroscience and Inauguration of the BCCN Freiburg, Germany
Sep 2005	'Data Analysis and Interpretation of Cortical Interactions', RIKEN Brain Science Institut, Tokyo, Japan
Jun 2005	'Analysis and identification of cortical cell assemblies', Intern. Seminar & Workshop 'Nonlinear Dynamics in Biophysics', Dresden, Germany
May 2005	'Identification of Cortical Network Interaction in Multiple Parallel Spike Trains', Fraunhofer Institute FIRST, Berlin, Germany

May 2005	'Detektion und Identifikation neuronaler Wechselwirkung im kortikalen Netzwerk', Johannes Gutenberg-Univ, Mainz and 'Rhein-Main Kolloquium Stochastik' and 'IAK Analyse und Modellierung stochastischer nichtlinearer Prozesse', Mainz, Germany
Jan 2005	'Correlation analysis of multi-dimensional neuronal spike data', School on 'Advanced Scientific Computing', Drakensberge, South Africa
Dec 2004	'Detection and Identification of Cortical Network Dynamics', Otto-von- Guericke-Univ, Magdeburg, Germany
Oct 2004	'Analysis and Identification of Neuronal Interactions in the Cortex', Univ Minneapolis, USA
Apr 2004	'Effect of Cross-Trial Non-Stationarity on Joint-Spike Events', Institut de Neurosciences Cognitives de la Mediterranee, CNRS, Marseille, France
Apr 2004	'Analysis and Identification of Cortical Network Dynamics', Berlin Neuroscience Meeting, Liebenwalde, Germany
Apr 2004	'Analysis and Identification of Neuronal Interactions in the Cortex', Inst Physik, Univ. Potsdam, Germany
Mar 2004	'Impact of Higher-Order Correlations on Coincidence Distributions of Massively Parallel Data', Higher-order Workshop, Inst. Biology, Albert-Ludwigs Univ, Freiburg, Germany
Feb 2004	'Impact of Higher-Order Correlations on Coincidence Distributions of Massively Parallel Data', VW-Workshop of the cooperation 'Dynamics of Cortical Cell Assemblies - Experiment and Theory', Inst für Physiologie, Universitäts-klinikum Hamburg-Eppendorf, Germany
Oct 2003	'Space-resolved correlation studies', Intern. Workshop', BrainWorks 2003', Emmendingen, Germany
Oct 2003	'Synchronized spiking activity in relation to LFP', Intern. Workshop 'Brain-Works 2003', Emmendingen, Germany
Aug 2003	'Detecting Spike Coincidences in Non-Stationary Settings', Intern. Conference on 'Neuronal Assemblies and Dynamical Systems: A Conference Honoring George Gerstein', Philadelphia, USA
Aug 2003	'Analysis and Identification of Neuronal Interactions in the Cortex', Center for Computational Biology, Montana State Univ. Bozeman, Montana, USA
Apr 2003	'Analysis and Identification of Cortical Network Dynamics', CNRS, Paris, France
Mar 2003	'Analysis and Identification of Cortical Network Dynamics', CNRS, Paris, France
Feb 2003	'Effect of across-trial non-stationarity on correlation measures of joint-spike events', Mathematical Biosciences Inst., Ohio-State Univ., Columbus, USA
Feb 2003	'Detecting coordinated spiking activity in multiple parallel processes', Center for the Neural Basis of Cognition, Carnegie Mellon Univ / Univ of Pittsburgh, Pittsburgh, USA
Dec 2002	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', Albert-Ludwigs Univ, Freiburg, Germany
Dec 2002	'Analysis and Identification of Neuronal Interactions in the Cortex', Inst. Des Sciences Cognitives, CNRS, Lyon, France
Oct 2002	'A two rate state model reveals effects of non-stationarity on crosscorrelation', Hebrew Univ., School of Medicine, Jerusalem, Israel
Oct 2002	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', Hebrew Univ, School of Medicine, Jerusalem, Israel
Sep 2002	'Detection and Interpretation of Assembly Dynamics', VW-Workshop of the cooperation 'Dynamics of Cortical Cell Assemblies - Experiment and Theory', Frankfurt/M, Germany
Jul 2002	'Detection and Interpretation of Coordinated Spiking Activity in the Cortex', Intern. Conference 'Computational Neuroscience', Workshop on Neural Assemblies, Chicago, USA
Jul 2002	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', Univ. of Utah, Salt Lake City, USA
May 2002	'Coordinated Neuronal Spiking Activity in the Cortex', Intern. Leopoldina Symposium on 'Nonlinear Dynamics and the Spatiotemporal Principles in Biology', Darmstadt, Germany

Apr 2002	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', Intern. Conference on 'Cooperative Dynamics of Neural Systems', Pucon, Chile
Mar 2002	'A two rate state model reveals effects of non-stationarity on crosscorrelation', Conference of the German Physics Society (DPG), Regensburg, Germany
Feb 2002	'Effects of across trial non-stationarity on joint-spike events', Fraunhofer Inst. for Autonomous Intelligent Systems, Sankt Augustin, Germany
Jan 2002	'Temporal Scales of Cortical Interaction', MPI for Mathematics in the Sciences, Leipzig, Germany
Jan 2002	'Analysis of Multiple Parallel Spiking Activity', Faculty of Computer Science, Technical Univ Berlin, Germany
Jan 2002	'A two rate-state model reveals effects of non-stationarity on joint-spike events', Univ of Ulm, Germany
Dec 2001	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', FENS Winter-School, Kitzbühel, Austria
Nov 2001	'Detecting Coordinated Activity in Multiple Parallel Recordings', Dept Biology, Univ. of Maryland, College Park, USA
Nov 2001	'Detecting Coordinated Activity in Multiple Parallel Recordings', NIMH-NIH, Sect Neural Coding and Computation, Bethesda, USA
Nov 2001	'Effect of Non-Stationarities on Joint-Spike Events', Dept Neuroscience, Univ. Pennsylvania, Philadelphia, USA
Oct 2001	'Effect of Non-Stationarities on Joint-Spike Events', 'Berlin-Workshop' Berlin, Germany
Sep 2001	'Influence of Background Oscillations on Spike Correlations', 'BrainWorks 2001', Gütenbach, Germany
Jun 2001	'Simulations and Surrogate Data as Tools for the Development of Data Analysis Techniques', Workshop on 'Development of Network Simulation Tools', Honda R&D Europe, Offenbach, Germany
Jun 2001	'Detecting Coordinated Spiking Activity in Multiple Parallel Recordings', 'Koerber-Workshop', MPI for Brain Research, Frankfurt/M, Germany
Mar 2001	''Detection and interpretation of synchronous spiking activity', Dept. of Nonlinear Dynamics and Time Series Analysis, MPI for Physics of Complex Systems, Dresden, Germany
Feb 2001	'Detection und Interpretation synchroner Spikeaktivität im kortikalen Netzwerk', Workshop of the Graduiertenkolleg 'Signal Cascades in Living Systems', Lebus, Germany
Nov 2000	'Detecting Higher Order Coincidences in Massive Parallel Processes', Dept Neuroscience, Univ Pennsylvania, Philadelphia, USA
Nov 2000	'Evaluation of the Significance of Synchronous Spiking Events: Coping with Non-Stationarities', Brown Univ, Providence, USA
Nov 2000	'Detection and Significance of Synchronous Spiking Activity in the Cortex', Dept Biology, MIT, Boston, USA
Nov 2000	'Das Gehirn als neuronales Netz', Ringvorlesung 'Kognitive Neurowissenschaft' J-W Goethe Univ. Frankfurt/M and MPI for Brain Research, Frankfurt/M, Germany
Mar 2000	'Aspects of Spike Synchronization in the Cortex', Honda, R&D Europe, Future Technology Research, Offenbach, Germany
Mar 2000	'Interaction of Synchronous Spiking and Ongoing Activity', Symposium on 'Synapses, Networks and Synchronization', 79th Congress of the German Physiological Society, Ulm, Germany
Mar 2000	'Interaction of Synchronous Spiking and Ongoing Activity', Dept Neuroinformatics, Univ of Ulm, Germany
Mar 2000	'Detection and Significance of Synchronized Activity in the Cortex', MPI für Strömungsforschung, Göttingen, Germany
Jan 2000	'Detecting unitary events without discretization of time', 'Ringberg-Workshop', Tegernsee, Germany

Nov 1999	'Time scales of spike synchronization in the cortex', RWTH Aachen, Inst. for Biology II, Aachen, Germany
Nov 1999	'Aspekte der Signifikanzuntersuchung synchroner Spikeaktivität von zeitlich strukturierten Spiketrains', RWTH Aachen, Inst. for Theoretical Physics, Aachen, Germany
Sep 1999	'Time scales of spike synchronization in the cortex', Leibnitz Inst. for Neurobiology, Magdeburg, Germany
Jul 1999	'Time scales of cortical spiking activity', Andalusian Technology Park, Malaga, Spain
Jun 1999	'Synchronous Spiking in cortical Activity - Experiments and Models', Intern. Workshop on 'Gehirn und Gestalt', Delmenhorst, Germany
May 1999	'Unitary joint-spike events in multiple spike trains', Eberhard-Karls Univ., Section for Sensorimotor Research, Tübingen, Germany
Dec 1998	'Unitary joint-events in cortical activity', Intern. Winterschool on 'Networks with Spiking Neurons and Synaptic Plasticity', Berlin, Germany
Jul 1998	'Unitary Joint-Events in Multiple-Neuron Activity', Univ. of Bielefeld, Dept. Neurobiology, Bielefeld, Germany
Jun 1998	'Detection and significance of unitary joint-events in the spiking activity of multiple unit recording', FENS Satellite Symposium on 'Recording and analysis of neuronal population codes in awake animals', Berlin, Germany
Jan 1997	'Unitary Events in Multiple-Neuron Spiking Activity', MPI for Brain Research, Frankfurt/M, Germany
Sept 1996	'Unitary Joint-Events in Multiple-Neuron Spiking Activity: Detection, Significance and Interpretation', Albert-Ludwigs Univ., Inst. Biology III, Freiburg, Germany
Aug 1996	'Unitary Events in Multiple-Neuron Spiking Activity: Detection, Significance and Interpretation', CRNC-CNRS, Marseille, France
Jun 1996	'Unitary Events in Multiple-Neuron Spiking Activity: Detection, Significance and Interpretation', Univ of Bremen, Germany
Jun 1996	'Besondere Koinzidenzereignisse in Multi-Neuronen Ableitungen: Detektion, Signifikanz und Interpretation', Ruhr-Univ Bochum, Germany
Jun 1996	'Unitary Events in Multiple-Neuron Spiking Activity: Detection, Significance and Interpretation', Phillips-Univ Marburg, Marburg, Germany
Jun 1996	'Detection and Significance of Unitary Events in Multiple-Neuron Spiking Activity', MPI for Psychological Research, München, Germany
Mar 1996	'Unitary Joint-Events in Multiple-Neuron Activity: Detection, Significance and Interpretation', Weizmann Inst. of Science, Rehovot, Israel
Mar 1996	'Unitary Events in Multiple-Neuron Spiking Activity: Detection, Significance and Interpretation', Zichron Meeting of the Center for Neural Computation, Hebrew Univ, Zichron, Israel
Oct 1994	'Analyse von Multi-Neuron-Aktivität aus dem präfrontalen Kortex des wachen Affen: Unitary Events als Äusserungen von Cell-Assemblies? ' Otto-von-Guericke Univ, Magdeburg, Germany
Sep 1994	'Analyse simultan abgeleiteter Spike-Trains: Unitary Events als Äußerungen von Cell-Assemblies?', Ruhr-Univ Bochum, Germany
Jul 1994	'Über die Signifikanz gleichzeitigen Feuerns in neuronaler Gruppenaktivität' Phillips-Univ Marburg, Germany
Jul 1991	'Model of sound localization in the barn owl', Phillips-Univ Marburg, Germany
Nov 1990	'Sound localization in the Barn Owl: a quantitative model of binaural interaction in the Nucleus Laminaris', Caltech, Pasadena, USA

14 Scientific Stays

Oct 2016	with Profs. I. Fujita and H. Tamura, Osaka Univ, Osaka, Japan

Feb 2016	with Profs. I. Fujita and H. Tamura, Osaka Univ, Osaka, Japan
Nov 2015	with Prof. P. Maldonado, Univ. de Chile, Santiago, Chile
June 2015	with Profs. I. Fujita and H. Tamura, Osaka Univ, Osaka, Japan
Dec 2014	with Profs. I. Fujita and H. Tamura, Osaka Univ, Osaka, Japan
Aug 2014	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Jan 2014	with Profs. I. Fujita and H. Tamura, Osaka Univ, Osaka, Japan
May 2013	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Nov 2011	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Jan 2009	with Prof. G. Einevoll, Norwegian Univ. of Life Sciences, As, Norway
May 2008	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Nov 2007	with Prof. C. Gray, Montana State Univ. Bozeman, USA
Aug 2005	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Nov 2004	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Apr 2004	with Dr. A. Riehle, CNRS-ICNM, Marseille, France
Aug 2003	with Prof. C. Gray, Montana State Univ. Bozeman, USA
Oct 2002	at the ICNC, Hebrew Univ. Jerusalem, Israel (with Prof. M. Abeles)
Jun 2002	with Dr. A. Riehle, CNRS-INPC, Marseille, France
Apr 2002	with Prof. P. Maldonado, Univ. de Chile, Santiago, Chile
Nov 2001	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Nov 2000	with Prof. G. Gerstein, Univ. Pennsylvania, Philadelphia, USA
Nov 2000	with Prof. E. Brown, Harvard Medical School, Boston, USA
Apr 2000	with Dr. A. Riehle, CRNC-CNRS, Marseille, France
Oct 1999	with Dr. A. Riehle, CRNC-CNRS, Marseille, France
Dec 1998	with Prof. A. Herz, Humboldt Univ. Berlin, Germany
Aug 1998	with Dr. A. Riehle, CRNC-CNRS, Marseille, France
Sep/Oct 1997	with Prof. A. Aertsen, Freiburg, Germany
Aug 1997	with Dr. A. Riehle, CRNC-CNRS, Marseille, France
Apr 1997	with Prof. A. Aertsen, Freiburg, Germany
Aug 1996	with Dr. A. Riehle, CRNC-CNRS, Marseille, France
Apr 1994	with Prof. A. Aersten, Weizmann Inst. of Science, Rehovot, Israel
Mar 1994	with Prof. M. Abeles, Hebrew Univ. Jerusalem, Israel
May 1992	with Profs. M. Abeles and E. Vaadia, Hebrew Univ. Jerusalem, Israel
Nov 1990	with Prof. C. Carr, Univ. of Maryland, Maryland, USA

15 Publications

Researcher ID: I-6321-2013
ORCID: 0000-0003-2829-2220

Metrics

h-index: 34, total citations: 4643 (update: November 2019)

Peer-Reviewed Articles

2019

Sprenger J, Zehl L, Pick J, Sonntag M, Grewe J, Wachtler T, **Grün S**, Denker M (2019) odMLtables: A User-Friendly Approach for Managing Metadata of Neurophysiological Experiments. Frontiers in Neuroinformatics 13:62, doi: 10.3389/finf.2019.00062

Jo, H-g, Kellermann T, Baumann C, Ito J, Schulte Holthausen B, Schneider F, **Grün S**, Habel U (2019) Distinct modes of top-down cognitive processing in the ventral visual cortex. NeuroImage 193:201-213, doi: 10.1016/j.neuroimage.201902.068

Jo H-G, Ito J, Schulte Holthausen B, Baumann C, **Grün S**, Habel U, Kellermann T (2019) Task-dependent functional organizations of the visual ventral stream. Scientific Reports 9:9316, doi: 10.1038/s41598-019-45707-w

Sukiban J, Voges N, Dembek TA, Pauli R, Visser-Vandewalle V, Denker M, Weber I, Timmermann L, **Grün S** (2019) Evaluation of Spike Sorting Algorithms: Application to Human Subthalamic Nucleus Recordings and Simulations. Neuroscience 414:168-185, doi: 10.1016/j.neuroscience.2019.07.005

Stella A, Quaglio P, Torre E, **Grün S** (2019) 3d-SPADE: Significance of spatio-temporal patterns of various temporal extents. Biosystems 185:104022, doi: 10.1016/j.biosystems.2019.104022

Dahmen D, **Grün S**, Diesmann M, Helias M (2019) Second type of criticality in the brain uncovers rich multiple-neuron dynamics. PNAS 116(26):13051-13060 doi: 10.1073/pnas.1818972116

Ito J, Lucrezia E, Palm G, **Grün S** (2019) Detection and evaluation of bursts in terms of novelty and surprise. Mathematical Biosciences and Engineering 16(6):6990-7008 doi: 10.3934/mbe.2019351

Einevoll GT, Destexhe A, Diesmann M, **Grün S**, Jirsa V, de Kamps M, Migliore M, Ness TV, Plesser HE, Schürmann F (2019) The Scientific Case for Brain Simulations. Neuron 4:102. doi: 10.1016/j.neuron.2019.03.027

2018

Gutzen R, von Papen M, Trensch G, Quaglio P, **Grün S**, Denker M (2018) Reproducible neural network simulations: statistical methods for model validation on the level of network activity data. Frontiers in Neuroinformatics doi:10.12751/nncn.bc2018.0045

de Haan M, Brochier TG, **Grün S**, Riehle A, Barthelmy FV (2018) Real-time visuomotor behavior and electrophysiology recording setup for use with humans and monkeys. Journal of Neurophysiology doi:10.1152/jn.00262.2017

Quaglio P, Rostami V, Torre E, **Grün S** (2018) Methods for identification of spike patterns in massively parallel spike trains. Biological Cybernetics pp. 1-24. doi:10.1007/s00422-018-0755-0

Riehle A, Brochier TG, Nawrot M, **Grün S** (2018) Behavioral context determines network state and variability dynamics in monkey motor cortex. Front. Neural Circuits 12:52 doi:10.3389/fncir.2018.00052

Denker M, Zehl L, Bjørg K, Diesmann M, Brochier T, Riehle A, **Grün S** (2018) LFP beta amplitude is linked to mesoscopic spatio-temporal phase patterns. Scientific Reports 8:5200 doi: 10.1038/s41598-018-22990-7

Brochier T, Zehl L, Hao Y, Duret M, Sprenger J, Denker M, **Grün S**, Riehle A (2018) Massively parallel recordings in macaque motor cortex during an instructed delayed reach-to-grasp task. (Data publication) Scientific Data 5:180055 doi: 10.1038/sdata.2018.55, Data available at https://web.gin.g-node.org/INT/multielectrode_grasp

Kass RE, Amari S, Arai K, Brown NE, Diekmann CO, Diesmann M, Doiron B, Eden UT, Fairhall AL, Fiddyment GM, Fukai T, **Grün S**, Harrison MT, Helias M, Nakahara H, Teramae J, Thomas PJ, Reimers M, Rodu J, Rotstein HG, Shea-Brown E, Shimazaki H, Shinomoto S, Yu BM, Kramer MA (2018) Computational neuroscience: Mathematical and statistical perspectives. Annual Reviews of Statistics and Its Application Vol. 5:183-214 doi: 10.1146/annurev-statistics-041715-033733

2017

Ito J, Yamane Y, Maldonada P, Fukita I, Tamura H, **Grün S** (2017) Switch from ambient to focal processing mode explains the dynamics of free viewing eye movements. Scientific Reports 7, Art. No. 1082. Doi:10.1038/s41598-017-01076-w

Quaglio P, Yegenoglu A, Torre E, Endres DM, **Grün S** (2017) Detection and Evaluation of Spatio-Temporal Spike Patterns in Massively Parallel Spike Train Data with SPADE Methods, Front. Comput. Neurosci. 11:41. doi:10.3389/fncom.2017.00041

Rostami V, Ito J, Denker M, **Grün S** (2017) [Re] Spike Synchronization and Rate Modulation Differentially Involved in Motor Cortical Function. ReScience 3:1, article number 3; doi:10.5281/zenodo.583814

Rostami V, Porta Mana P, **Grün S**, Helias M (2017b). Bistability, non-ergodicity, and inhibition in pairwise maximum-entropy models. PLOS Computational Biology 13(10): e1005762. DOI: 10.1371/journal.pcbi.1005762

Senk J, Yegenoglu A, Amblet O, Brukau Y, Davison A, Roland Lester D, Lührs A, Quaglio P, Rostami V, Rowley A, Schuller B, Barry Stokes A, van Albada SJ, Zielasko D, Diesmann M, Weyers B, Denker M, **Grün S** (2017) A Collaborative Simulation-Analysis Workflow for Computational Neuroscience Using HPC In: Di Napoli E, Hermanns MA, Iliev H, Lindemann A, Peyser A (eds) High-Performance Scientific Computing, JHPCS 2016. Lecture Notes in Computer Science, vol 10164, pp. 243-256. Springer, Cham. doi:10.1007/978-3-319-53862-4_21

2016

Hagen E, Dahmen D, Stavrinou ML, Linden H, Tetzlaff T, van Albada SJ, **Grün S**, Diesmann M, Einevoll GT (2016) Hybrid Scheme for Modeling Local Field Potentials from Point-Neuron Networks. Cereb Cortex. 26(12): 4461 - 4496. doi: 10.1093/cercor/bhw237

Mochizuki, Onaga, Shimazaki, Shimokawa, Tsubo, Kimura, Saiki, Sakai, Isomura, Fujisawa, Shibata, Hirai, Furuta, Kaneko, Takahashi, Nakazono, Ishino, Sakurai, Kitsukawa, Lee, Lee, Jung, Babul, Maldonado, Takahashi, Arce-McShane, Ross, Sessle, Hatsopoulos, Brochier, Riehle, Chorley, **Grün**, Nishijo, Ichihara-Takeda, Funahashi, Shima, Mushiake, Yamane, Tamura, Fujita, Inaba, Kawano, Kurkin, Fukushima, Kurata, Taira, Tsuitsui, Ogawa, Komatsu, Koida, Toyama, Richmond, Shinomoto (2016) Similarity in Neuronal Firing Regimes across Mammalian Species. Journal of Neuroscience, 36(21): 5736 - 5747. doi:10.1523/JNEUROSCI.0230-16.2016

Torre E, Canova C, Denker M, Gerstein GL, Helias M, **Grün S** (2016) ASSET: Analysis of sequences of synchronous events in massively parallel spike trains. PloS Computational Biology 12(7):e1004939. Doi:10.1371/journal.pcbi.1004939

Torre E, Quaglio P, Denker M, Brochier T, Riehle A, **Grün S** (2016) Synchronous spike patterns in Macaque motor cortex during an Instructed-delay reach-to-grasp task. Journal of Neuroscience 36(32): 8329-8340. doi: 10.1523/JNEUROSCI.4375-15.2016

Yegenoglu A, Quaglio P, Torre E, **Grün S**, Enders D (2016) Exploring the Usefulness of Formal Concept Analysis for Robust Detection of Spatio-Temporal Spike Patterns in Massively Parallel Spike Trains. In: Graph-Based Representation and Reasoning, 22nd Intern Conf on Conceptual Structures, ICCS 2016, Annecy, France. pp 3-16. doi:10.1007/978-3-319-40985-6_1 ISBN: 978-3-319-40984-9

Zehl L, Jaillet F, Stoewer A, Sobolev A, Wachtler T, Brochier T, Riehle A, Denker M, **Grün S** (2016) Handling Metadata in a Neurophysiology Laboratory. Methods, Frontiers in Neuroinformatics 10, 26. doi:10.3389/fninf.2016.00026

2015

Milekovic T, Truccolo W, **Grün S**, Riehle A, and Brochier T (2015) Local field potentials in primate motor cortex encode grasp kinetic parameters. NeuroImage 114:338-355. doi: 10.1016/j.neuroimage.2015.04.008

2014

Cichon N B, Denker M, **Grün S**, and Hanganu-Opatz I L (2014) Unsupervised classification of neocortical activity patterns in neonatal and pre-juvenile rodents. Frontiers in Neural Circuits 8:50, doi: 10.3389/fncir.2014.00050

Ito J, Roy S, Liu Y, Cao Y, Fletcher M, Lu L, Boughter J, **Grün S**, Heck D (2014) Whisker barrel cortex delta oscillations and gamma power in the awake mouse are linked to respiration. Nature Communications 5:3572, doi: 10.1038/ncomms4572

2013

Picado-Muiño D, Borgelt C, Berger D, Gerstein G, **Grün S** (2013) Finding neural assemblies with frequent item set mining. Frontiers in Neuroinformatics 7:9 doi: 10.3389/fninf.2013.00009

Ito J, Maldonado P, **Grün S** (2013) Cross-frequency interaction of the eye-movement related LFP signals in V1 of freely viewing monkeys. Frontiers in Systems Neuroscience 7:1 doi: 10.3389/fnsys.2013.00001

Pipa G, **Grün S**, van Vreeswijk C (2013) Impact of spike-train autostructure on probability distribution of joint-spike events Neural Computation 25(5): 1123-1163 doi: 10.1162/NECO_a_00432

Riehle A, Wirtssohn S, **Grün S**, Brochier T (2013) Mapping the spatio-temporal structure of motor cortical LFP and spiking activities during reach-to-grasp movements Frontiers in Neural Circuits 7: 48 doi: 10.3389/fncir.2013.00048

Schultze-Kraft M, Diesmann M, **Grün S**, Helias M (2013) Noise Suppression and Surplus Synchrony by Coincidence Detection, PLoS Computational Biology 9(4): e1002904 doi:10.1371/journal.pcbi.1002904

Torre E, Picado-Muiño D, Denker M, Borgelt C, **Grün S** (2013) Statistical evaluation of synchronous spike patterns extracted by Frequent Item Set Mining. Frontiers in Computational. Neuroscience. 7:132. doi: 10.3389/fncom.2013.00132

2012

Berger D, Pazienti A, Flores F J, Nawrot M, Maldonado PM, **Grün S** (2012) Viewing strategy of Cebus monkeys during free exploration of natural images. Brain Research 1434: 34-46 doi:10.1016/j.brainres.2011.10.013

Borgelt C, Braune C, Kötter T, **Grün S** (2012) New algorithms for finding approximate frequent item sets. Soft Computing 16(5): 903-917, doi: 10.1007/s00500-011-0776-2

Braune C, Borgelt C, **Grün S** (2012) Assembly Detection in Continuous Neural Spike Train Data. Advances in Intelligent Data Analysis XI: Proc. 11th Int. Symposium (IDA 2012, Helsinki, Finland), LNCS 7619:78-89. Springer-Verlag, Berlin/Heidelberg, Germany 2012. doi:10.1007/978-3-642-34156-4_9

Gerstein GL, Williams ER, Diesmann M, **Grün S**, Trengove C (2012) Detecting synfire chains in parallel spike data. Journal of Neuroscience Methods 206 (1): 54-64 doi: 10.1016/j.jneumeth.2012.02.003

Shimazaki H, Amari S, Brown E N, **Grün S** (2012) State-Space Analysis of Time-Varying Higher-Order Spike Correlation for Multiple Neural Spike Train Data. PLoS Computational Biology 8(3): e1002385 doi:10.1371/journal.pcbi.1002385

2011

Braune C, Borgelt C, **Grün S** (2011) Finding Ensembles of Neurons in Spike Trains by Non-linear Mapping and Statistical Testing. Proc. 10th Int. Symposium on Intelligent Data Analysis (IDA 2011, Porto, Portugal), LNCS 7014:55-66. Springer-Verlag, Berlin, Germany 2011

Denker M, Roux S, Lindén H, Diesmann M, Riehle A, **Grün S** (2011) The local field potential reflects surplus spike synchrony. Cerebral Cortex 21 (12): 2681-2695. doi: 10.1093/cercor/bhr040

Ito J, Maldonado P, Singer W, **Grün S** (2011) Saccade-related modulations of neuronal excitability support synchrony of visually elicited spikes. Cerebral Cortex 21 (11): 2482-2497. doi: 10.1093/cercor/bhr020

Linden H, Tetzlaff T, Potjans T C, Pettersen K H, **Grün S,** Diesmann M, Einevoll G (2011) Modeling the Spatial Reach of the LFP. Neuron 72, 859–872 doi: 10.1016/j.neuron.2011.11.006

2010

Berger D, Borgelt C, Morrison A, **Grün S** (2010) Efficient Identification of Assembly Neurons within Massively Parallel Spike Trains. Computational Intelligence and Neuroscience Vol. 2010, Article ID 439648, 18 pages, doi:10.1155/2010/439648

Denker M, Finke R, Schaupp F, **Grün S,** Menzel R (2010) Neural correlates of odor learning in the honeybee antennal lobe. European Journal of Neuroscience, 31(1):119-133

Denker M, Riehle A, Diesmann M, **Grün S** (2010) Estimating the contribution of assembly activity to cortical dynamics from spike and population measures. Journal of Computational Neuroscience 29: 599-561

Louis S, Gerstein GL, **Grün S,** Diesmann M (2010) Surrogate spike train generation through dithering in operational time. Frontiers in Computational Neuroscience 4: 127, doi: 10.3389/ fncom.2010.00127

Louis S, Borgelt C, **Grün S** (2010) Complexity distribution as a measure for assembly size and temporal precision. Neural Networks, 23: 705-712

Staude B, Rotter S, **Grün S** (2010) CuBIC: Cumulant based inference of higher-order correlations in massively parallel spike trains. Journal of Computational Neuroscience, 29 (1-2): 327-350

Staude B, **Grün S,** Rotter S (2010) Higher-order correlations in non-stationary parallel spike trains: statistical modeling and inference. Frontiers in Computational Neuroscience 4:16, doi: 10.3389/fncom.2010.00016

2009

Grün S (2009) Data-driven significance estimation of precise spike correlation. Journal of Neurophysiology, 101, 1126-1140 (invited review)

Grün S, Berger D, Borgelt C (2009) Identification of neurons participating in cell assemblies. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 3493-3496

Kilavik B E, Roux S, Ponce-Alvarez A, Confais J, **Grün S,** Riehle A (2009) Long-term modifications in motor cortical dynamics induced by intensive practice. Journal of Neuroscience 29(40), 12653-12663

Sharott A, Moll C, Engler G, Denker M, **Grün S,** Engel A (2009) Different subtypes of striatal neurons are selectively modulated by cortical oscillations. Journal of Neuroscience, 29, 4571-4585

Shimazaki H, Amari S, Brown E N, **Grün S** (2009) State-space analysis on time-varying correlations in parallel spike sequences. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 3501-3504

2008

Maldonado P, Babul C, Singer W, Rodriguez E, Berger D, **Grün S** (2008) Synchronization of neuronal responses in primary visual cortex of monkeys viewing natural images. Journal of Neurophysiology, 100: 1523-1532

Pazienti A, Maldonado P, Diesmann M, **Grün S** (2008) Effectiveness of systematic spike dithering depends on the precision of cortical synchronization, Brain Research, 1225: 39-46

Schrader S, **Grün S,** Diesmann M, Gerstein G (2008) Detecting synfire chain activity using massively parallel spike train recording. Journal of Neurophysiology 100(4): 2165-2176

Staude B, Rotter S, and **Grün S** (2008) Can spike coordination be differentiated from rate covariation? Neural Computation 20, 1973-1999

2007

Berger D, Warren D, Normann R, Arieli A, **Grün S** (2007) Spatially organized spike correlation in cat visual cortex. Neurocomputing 70, 2112-2116

Denker M, Roux S, Timme M, Riehle A, and **Grün S** (2007) Phase synchronization between LFP and spiking activity in motor cortex during movement preparation. Neurocomputing 70, 2096-2101

Nawrot M P, Boucsein C, Rodriguez-Molina V, Aertsen A, **Grün S** and Rotter S (2007) Serial interval statistics of spontaneous activity in cortical neurons in vivo and in vitro. Neurocomputing 70, 1717-1722

Pazienti A, Diesmann M, and **Grün S** (2007) Bounds of the ability to destroy precise coincidences by spike dithering. Lecture Notes in Computer Science 4729, 428-437

Pipa G, Riehle A, and **Grün S** (2007) Validation of task-related excess of spike coincidences based on NeuroXidence. Neurocomputing 70, 2064-2068

Up to 2006

Pazienti A and **Grün S** (2006) Robustness of the significance of spike correlation with respect to sorting errors. Journal of Computational Neuroscience 21, 329-342

Czanner G, **Grün S,** and Iyengar S (2005) Theory of the snowflake plot and its relations to higher-order analysis methods. Neural Computation, 17(7), 1456-1479

Schneider G and **Grün S** (2003) Analysis of higher-order correlations in multiple parallel processes. Neurocomputing, 52–54, 771-777

Pipa G, Diesmann M, and **Grün S** (2003) Significance of joint-spike events based on trial-shuffling by efficient combinatorial methods. Complexity, 8(4), 79-86

Pipa G and **Grün S** (2003) Non-parametric significance estimation of joint-spike events by shuffling and resampling. Neurocomputing, 52-54, 31-37

Grün S, Riehle A, Diesmann M (2003) Effect of cross-trial nonstationarity on joint-spike events. Biological Cybernetics 88(5): 335-351.

Grün S, Riehle A, Aertsen A, and Diesmann M (2003) Temporal scales of cortical interactions. Nova Acta Leopoldina 88(332): 1-18.

Gal V, **Grün S,** and Tetzlaff R (2003) Analysis of multidimensional neural activity via CNN-UM. Intern. J Neural Systems, 13(6), 479-487

Grün S, Diesmann M, and Aertsen A (2002) 'Unitary Events' in multiple single-neuron activity. I. Detection and significance. Neural Computation, 14(1), 43-80

Grün S, Diesmann M, and Aertsen A (2002) 'Unitary Events' in multiple single-neuron activity. II. Non-Stationary data. Neural Computation, 14(1), 81-119

Gal V, **Grün S,** and Tetzlaff R (2002) Analyzing multidimensional neural activity via CNN-UM. In R. Tetzlaff, ed, Proc. 7th IEEE Intern. Workshop on Cellular Neural Networks and their Applications, pages 243-250. World Scientific, Singapore

Riehle A, Grammont F, Diesmann M, and **Grün S** (2000) Dynamical changes and temporal precision of synchronized spiking activity in monkey motor cortex during movement preparation. J Physiol (Paris), 94(5-6), 569-582

Grün S, Diesmann M, Grammont F, Riehle A, and Aertsen A (1999) Detecting unitary events without discretization of time. J Neurosci Methods, 94:67-79

Riehle A, **Grün S,** Diesmann M, and Aertsen A. (1997) Spike synchronization and rate modulation differentially involved in motor cortical function. Science, 278, 1950-1953

Riehle A, **Grün S,** Aertsen A, and Requin J. (1996) Signatures of dynamic cell assemblies in monkey motor cortex. In C. von der Malsburg, W. von Seelen, J. C. Vorbrüggen, and B. Sendhoff, eds, Artificial Neural Networks - ICANN '96, p 673–678, Berlin, Springer

Martignon L, von Hasseln H, **Grün S,** Aertsen A, and Palm G (1995) Detecting higher-order interactions among the spiking events in a group of neurons. Biol. Cybern. (1995) 73: 69

Other

Dahmen D, **Grün S**, Diesmann M, Helias M (2017) Two types of criticality in the brain. arXiv:1711.10930 [cond-mat.dis-nn]

Denker M, Zehl l, Kilavik B, Diesmann M, Brochier T, Riehle A, **Grün S** (2017) LFP beta amplitude is predictive of mesoscopic spatio-temporal phase patterns. arXiv:1703.09488 [q-bio.NC]

Books

S. Grün and S. Rotter. (2010) Analysis of parallel spike trains. editors. Springer Series on Computational Neuroscience 106, ISBN 978-1-4419-0377-8

Grün S. (1996) Unitary Joint-Events in Multiple-Neuron Spiking Activity: Detection, Significance, and Interpretation. Reihe Physik, Band 60. Verlag Harri Deutsch, Thun, Frankfurt/Main,. ISBN 3-8171-1506-7.

Book Chapters

Denker M, **Grün S** (2016) Designing workflows for the reproducible Analysis of Electrophysiological Data. in: Brain Inspired Computing, eds Amunts K, Grandinetti L, Lippert T, Petkov N. Springer Series Lecture Notes in Computer Science, Vol 10087,pp. 58-72. DOI:10.1007/978-3-319-50862-7_5

Grün, S. (2015) Spike Train Analysis: Overview. Book Section, Encyclopedia of Computational Neuroscience. eds. Jaeger, D and Jung, R. Springer New York, ISBN 978-1-4614-6674-1, http://dx.doi.org/10.1007/978-1-4614-6675-8_776

Grün, S. (2015) Unitary Event Analysis. Book Section, Encyclopedia of Computational Neuroscience. eds. Jaeger, D and Jung, R. Springer New York, ISBN 978-1-4614-6674-1, http://dx.doi.org/10.1007/978-1-4614-6675-8_412

Grün, S. (2015) Surrogate Data for Evaluation of Spike Correlation. Book Section, Encyclopedia of Computational Neuroscience. eds. Jaeger, D and Jung, R. Springer New York, ISBN 978-1-4614-6674-1, http://dx.doi.org/10.1007/978-1-4614-6675-8_411

Riehle A, Roux S, Kilavik BE, **Grün S**. (2010) Dynamics of motor cortical networks: the complementarity of spike synchrony and firing rate. In: Motor Control: Theories, experiments, and applications, Danion F, Latash ML (eds.), Oxford Univ Press: New York

Grün S, Diesmann M, Aertsen A. (2010) Unitary Event Analysis. In: Analysis of parallel spike trains. eds. Grün & Rotter. Springer Series in Computational Neuroscience

Louis S, Borgelt C, **Grün S.** (2010) Generation and selection of surrogate methods for correlation analysis. In: Analysis of parallel spike trains. eds. Grün & Rotter. Springer Series in Computational Neuroscience

Riehle A, Roux S, Kilavik BE, **Grün S.** (2010) Dynamics of motor cortical networks: the complementarity of spike synchrony and firing rate. In: Motor Control: Theories, experiments, and applications. Danion F, Latash ML (eds.), Oxford Univ Press: New York

Staude B, **Grün S,** Rotter S. (2010) Higher order correlations and cumulants. In: Analysis of parallel spike trains. eds. Grün & Rotter. Springer Series in Computational Neuroscience

Grün S, Abeles M, and Diesmann M. (2008) Impact of higher-order correlations on coincidence distributions of massively parallel data. Lecture Notes in Computer Science, 5286, 96-114

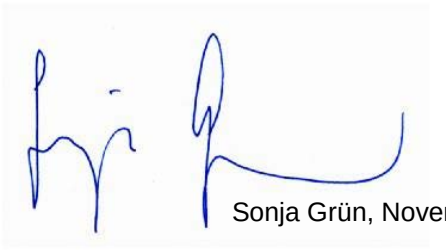
Pazienti A, Diesmann M, and **Grün S.** (2007) Bounds of the ability to destroy precise coincidences by spike dithering. Lecture Notes in Computer Science, 4729, 428 - 437

Aertsen A, Diesmann M, Gewaltig M O, **Grün S,** and Rotter S.(2001) Neural dynamics in cortical networks – precision of joint-spiking events. In G. Bock and J. Goode, editors, Complexity in biological information processing, vol. 239 of Novartis Foundation Symposium 2001, p 193–207. Wiley, Chichester.

Aertsen A, Diesmann M, **Grün S,** Arndt M, and Gewaltig M O. (1995) Coupling dynamics and coincident spiking in cortical neural networks. In H. J. Hermann, D. E. Wolf, and E. Pöppel, editors, Supercomputing in Brain Research: from Tomography to Neural Networks, p 213–223. World Scientific, Singapore.

Riehle A, Seal J, Requin J, **Grün S,** and Aertsen A. (1995) Multi-electrode recording of neuronal activity in the motor cortex: Evidence for changes in the functional coupling between neurons. In H. J. Hermann, D. E. Wolf, and E. Pöppel, editors, Supercomputing in Brain Research: from Tomography to Neural Networks, p 281–288. World Scientific, Singapore.

Martignon L, von Hasseln H, **Grün S,** and Palm G. (1994) Modelling the interaction in a set of neurons implicit in their frequency distribution: a possible approach to neural assemblies. In C et al Taddei, ed, Collected Lectures of the Seminar on Cybernetics. Ist di Cibernetica (period 93-94). Rosenberg-Sellier, Torino.



Sonja Grün, November 2019