Curriculum Vitae of Markus Diesmann

Date of birth:	25th November 1968
Place of birth:	Bochum (Germany)
Marital status:	married to Prof. Dr. Sonja Grün
Citizenship :	German
Email:	diesmann@fz-juelich.de
Website:	www.csn.fz-juelich.de
Office:	Institute of Neuroscience and Medicine (INM-6) Computational and Systems Neuroscience, Institute for Advanced Simulations (IAS-6) & JARA Brain Institut (INM-10) Jülich Research Centre 52425 Jülich, Germany

Tel: +49 2461 614748 (secr)
+49 2461 619301 (lab)
Fax: +49 2461 619460
Mob: +49 175 2901943

& Department of Psychiatry, Psychotherapy and Psychosomatics
RWTH Aachen University
Pauwelsstrasse 30
52074 Aachen, Germany

& Department of Physics
RWTH Aachen University
Otto-Blumenthal-Straße
52074 Aachen, Germany

1. Adjunct Affiliations

- Bernstein Center for Computational Neuroscience, Albert-Ludwigs-University Freiburg, Germany
- Member of JARA HPC, Jülich/ Aachen, Germany

2. Research Positions

From Apr 2015	Director of INM-10, JARA-Institut Brain structure-function relationships: Decoding the Human Brain at systemic levels, Jülich Research Centre and RWTH Aachen University, 52425 Jülich, Germany.
From Jan 2015	Co-opted Professor at Department of Physics, Faculty I, RWTH Aachen University, Aachen, Germany
From Jan 2013	Director of Institute for Advanced Simulation (IAS-6), Theoretical Neuroscience, Jülich Research Centre, Germany
From Mar 2011	Director of Institute of Neuroscience and Medicine (INM-6), Computational and Systems Neuroscience, Research Center Jülich and full professor (W3) in Computational Neuroscience at Faculty of Medicine, Faculty 10, RWTH

	Aachen University, Germany
Sep 2011 – Mar 2014	Visiting Scientist, RIKEN Brain Science Institute, Wako-Shi, Japan
Mar 2011 - Aug 2011	Part time Team Leader at RIKEN Brain Science Institute
Jul 2010 - Feb 2011	Team Leader at RIKEN Brain Science Institute
Sep 2006 - Jun 2010	Unit Leader at RIKEN Brain Science Institute, Wako City, Japan (in joint lab with PD Dr. Sonja Grün)
Jul 2006 - Sep 2006	Part time Unit Leader at RIKEN Brain Science Institute, Wako City, Japan (without salary)
Aug 2004 - Aug 2006	Assistant Professor (Juniorprofessor) Computational Neurophysics, Biology III, Albert-Ludwigs-University, Freiburg, Germany
Nov 2003 - Jul 2004	Assistant Professor (C1) Computational Neurophysics, Dept. Neurobiology & Biophysics, Biology III, Albert-Ludwigs-Univ., Freiburg, Germany
Aug 1999 - Oct 2003	Senior Staff, Dept. of Nonlinear Dynamics, Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, Germany
Aug 1997 - Jul 1999	Research Assistant, Dept. Neurobiology & Biophysics, Biology III, Albert-Ludwigs-University, Freiburg, Germany
Apr 1994 - Jun 1997	Research Assistant, Institut für Neuroinformatik, Ruhr-University Bochum, Germany
Mar 1993 - Mar 1994	Student Assistant
Feb 1992 - Mar 1992	Tutor physics for medical students
WS 1991, WS 1992	Tutor physics laboratory course
Sep 1991, Sep 1992	Tutor physics preparatory course

3. Offers and Awards

Juli 2019	Elected member of the Academy of Sciences and Literature, Mainz, Germany
Jan 2015	Co-opted Professor at Department of Physics, Faculty I, RWTH Aachen University, Aachen, Germany
Feb 2010	Offered position of director of Institute of Neuroscience and Medicine (INM-6), Computational and Systems Neuroscience, Jülich Research Centre and W3 professorship (tenured) in Computational Neuroscience, RWTH Aachen University, Germany
Sep 2009	Evaluated as “world-leading computational neuroscientist in the field of large-scale simulations” by an international review panel (12 experts, chair: Rodney Douglas, reporters for lab: Wolfgang Maass and Peter Latham) in BSI group review
Aug 2009	Offered W2 professorship (tenured) in Computational Neuroscience, RWTH Aachen University, Germany
Oct 2008	Short-listed 2nd. W3 professorship in Computational Neuroscience, Center for Integrative Neuroscience, Tübingen, Germany
Mar 2007	Short-listed 2nd. W3 professorship in Computational Neuroscience, Albert-Ludwigs-University Freiburg.

	Director of Bernstein Center (BCCN) Freiburg, Germany
Oct 2004	Short-listed 2nd. W3 professorship in Computational Neuroscience, Georg-August-University Göttingen in context of foundation of Bernstein Center (BCCN) Göttingen, Germany

4. Academic Background

Jan 2015	Co-opted Professor at Department of Physics, Faculty I, RWTH Aachen University, Germany
Mar 2011	Appointed full professor (W3) at RWTH Aachen University, Germany
Apr 2009 - Mar 2011	Affiliate Associate Professor at Division of New Technology Development, Saitama University Brain Science Institute, Saitama University, Japan
Apr 2009 - Mar 2011	Visiting Associate Professor, Graduate School of Advanced Science and Engineering, Waseda University, Shinjuku, Japan
Aug 2004	Appointed Juniorprofessor in Computational Neurophysics at Institute of Biology III, Albert-Ludwigs-University Freiburg, Germany
Nov 2002	Disputation (PhD) with distinction, Faculty of Physics, Ruhr-University Bochum, Germany
	Thesis: Conditions for Stable Propagation of Synchronous Spiking in Cortical Networks – Single Neuron Dynamics and Network Properties
	Supervisors:
	Prof. A. Aertsen, Prof C. von der Malsburg (1st reviewer),
	Prof. G. Schoener (2nd reviewer)
Aug 1996 - Jul 1999	Doctoral studies at Albert-Ludwigs-University, Freiburg, Germany
Mar 1994 - Jul 1996	Doctoral studies at Weizmann Institute of Science, Rehovot, Israel
WS 1991 - WS 1993	Diplom (MSc) Physics, Ruhr-University Bochum, Germany.
	Minor: Computer Science
	Thesis: Über Grundlagen und Formalisierung zeitgenauen Pulsverhaltens in kortikalen Netzwerken
	Supervisors:
	Prof. A. Aertsen, Prof C. von der Malsburg (1st reviewer)
Jun 1991	Cambridge Proficiency in English
WS 1990 - WS 1991	Physics and Cognitive Science, University of Sussex, UK
WS 1988 - SS1990	Vordiplom (Ba) Physics, Ruhr-University Bochum, Germany

Professional Societies

• Society for Neuroscience (SFN)
• German/European Society for Neuroscience (NWG)
• Deutscher Hochschulverband (DHV)

5. Research Grants

Apr 2020	Human Brain Project (HBP, SGA3) (1045.939 €) , 3 years
Jun 2019	ERS seed fund “NeuroModelingTalk”, (17.826 €), 1 year
Nov 2018	Helmholtz IVF pilot project SO-092 “Advanced Computing Architectures” (total 3 Mill €), 3 years
Nov 2018	DFG Research Training Group “MultiSenses-MultiScales” with Marc Spehr et al., 4.5 years
Apr 2018	Human Brain Project (HBP, SGA2) (968.196 €), 2 years
Apr 2016	Human Brain Project (HBP, SGA1) (1.003.000 €), 2 years
Oct 2013	Human Brain Project (HBP, RUP), (225.455 €), 2.5 years
Sep 2013	Clinical Research Group KFO 219, project 9 (336.050 €)
Jan 2013	Portfolio theme ‘Supercomputing and Modeling for the Human Brain’ (SMHB) in the Helmholtz Initiative (total 17.5 Mill €)
Jan 2011	BrainScaleS in “EU FET Proactive ICT Call 6”, 9 M Euro, 4 years (approved Dec 2010, 473.090 € for Jülich side)
Oct 2008	Brain and Neural Systems Team in “The Next-Generation Integrated Simulation of Living Matter” project, part of the Development and Use of the Next-Generation Supercomputer Project of MEXT (with Ishii (head), Doya, Fukai, Kanzaki, Kuroda, Sakumura, Usui), 5 years (approved Sep 2008)
Jan 2008	The Human Brain Model within the German Helmholtz Initiative on Systems Biology, 4.4 M Euro, 5 years (approved Nov 2006)
Aug 2007	eNEURO – multilevel neural simulation and modeling in Norwegian eScience –Infrastructure, theory and application (eVITA) program, 2.5 M Euro, 5 years (approved Jun 2007)
Apr 2007	Neural code and computations by local cortical networks: modeling and experiments RIKEN Strategic Research Program for R&D (with Fukai and Grün) 70 k Euro (my unit), 2 years
May 2006	Learning and processing of time-varying signals in a laminar-specific cortical microcircuit model Honda Research Institute. 150 k Euro, 3 years (approved May 2006)
Sep 2005	Fast Analog Computing with Emergent Transient States in Neural Architectures (FACETS) EU 16 labs, 11.4 M Euro, 4 years (approved Aug 2005)
Aug 2004	High Performance Computer Cluster (HPC) for the Simulation of Biological Neural Networks, HBFG Grossgerät Kapitel 1423 Titel 812 59, 150 k Euro (approved Jul 2003, DFG approval Aug 2004)
Jan 2004	Bernstein Center for Computational Neuroscience in Freiburg, BMBF, 8 M Euro (approved May 2003)

Jan 2004	Parallel Simulation of Biological Neuronal Networks: Integration of Distributed and Threaded Kernels, 313-PPP-N4-Ik, Project based personal exchange program, DAAD 10 k Euro, 2 years (approved Dec. 2003)
Jan 2004	Compositionality: Neuronal Basis of Complex Behavior, German-Israeli Project Cooperation DIP 1.125 M Euro, 5 years (approved Oct. 2003)
2002	Max-Planck-Society grant for high performance parallel computer equipment, 300 k Euro
2000	Max-Planck-Society grant for high performance parallel computer equipment, 200 k Euro

6. Group Members

Current group members:

Tom Tetzlaff (PostDoc)
Johanna Senk (PostDoc)
Paulina Dąbrowska (PhD)
Karolìna Korvasovà (PhD)
Anno Kurth (PhD)
Jasper Albers (PhD)
Younes Bouhadjar (PhD)
Renan Shimoura (PhD)
Martina Reske (Scientific Coordinator)
Cordula Huesgen (Scientific Coordinator)
Anne Elfgen (Scientific Coordinator)
David Goyer (Scientific Coordinator)
Justin Finnerty (Coord. Scient. Comp.)
Dennis Terhorst (Coord. Software Dev.)
Sebastian Gillessen (System Admin.)
Sebastian Lehmann (Graphic designer)
Jessica Mitchell (Scientific writer)
Sara Konradi (Scientific writer)
Steffen Graber (Web technician)
Janine Lehm (Secretary)
Saskia Meißner (Secretary)
Petra O'Brien (Secretary)

Former members:

Maren Maus (MSc)
Stefan Dasbach (MSc)
Maren Frings (Scientific Coordinator)
Jannis Schücker (PostDoc, PhD)
Jakob Jordan (PhD)
David Dahmen (PostDoc, PhD)
Moritz Helias (Postdoc, PhD)
Sacha van Albada (Postdoc)
Rembrandt Bakker (Postdoc)
Hannah Bos (Postdoc, PhD)
Daniel Mingers (MSc)
Daniel Biermann (MSc)
Sven Goedeke (PhD, Msc)
Tobias Kühn (PhD)
Luca Mana (Postdoc)
Jeyashree Krishnan (PhD)
Maximilian Schmidt (Postdoc, PhD)
Jana Pick (BSc)
Espen Hagen (Postdoc)
Dmytro Grytskyy (PhD)
Tammo Ippen (PhD)
Christoph Gollan (BSc)
Andrey Maksimov (PhD)
Long Duc Phan (PhD)
Till Schumann (Research Assistant)
Abigail Morrison (Postdoc, PhD)

Bjoerg Kilavik (Postdoc, PhD)
Chris Trengove (Postdoc, PhD)
Alexander Hanuschkin (PhD)
Andreas Steimer (MSc)
Susanne Kunkel (PhD)
Sven Schrader (PhD)
Daniel Schoener (MSc)
Jochen Eppler (PhD, MSc)
Michael Buschermoehle (MSc)
Tobias Potjans (PhD)
Ulrich Hehl (PhD)
Wiebke Potjans (PhD)
Sirko Straube (MSc)
Martin Mohns (MSc)
David Reichert (MSc)
Carsten Ebbinghaus (MSc)

7. Reviewer

- Associate editor for Frontiers in Neuroinformatics, Frontiers in Computational Neuroscience
- Ad hoc reviewer for: Science, Neural Computation, Biological Cybernetics, Journal of Computational Neuroscience, Neural Networks, Physical Review Letters, Physical Review E, PLoS Computational Biology, Parallel Computing, and Journal of Mathematical Biology
- Grant giving institutions: the Israel Science Foundation (ISF), the Dutch National Science Foundation (NOW), the Technology Foundation STW of the Dutch Research Council, The Wellcome Trust UK
- Member of ERC Review panel (OIST, Okinawa)

8. Administrative Responsibilities

From 2020	Member of Prozessmanagement Board, Jülich Research Centre
From 2020	Deputy Speaker of POF IV, Program 2
From 2020	Member of Roadmapping group “Scientific Computing in RF Information”, Jülich Research Centre, Germany
From 2019	Member of search committee for PGI directors “Neuromorphic Compute Nodes” and “Neuromorphic Software Ecosystem” at Jülich Research Centre, Germany
Sep 2019	PhD committee for Francesco Cremonesi, ‘Computational characteristics and hardware implications of brain tissue simulations’, EPFL, Lausanne, Switzerland
Jun 2019	PhD committee for Bruno Magalhaes, ‘Asynchronous Simulation of Neuronal Activity’, EPFL, Lausanne, Switzerland
2019 - 2020	Deputy Managing Director of the Institute of Advanced Simulation (IAS)
From 2019	Head of JuDocs (Center for Doctoral Researchers & Supervisors), Jülich Research Centre, Germany
From 2019	Official Speaker of PoF IV, P2, Topic III “Neuromorphic Computing and Network Dynamics
Nov 2018	Organizer of NEST User Documentation Workshop EITN, Paris, France
2018-2021	Coordinator of the HGF IVF pilot project SO-092 “ACA: towards multi-scale neural-density Neuromorpic Computing”
From 2018	Designated speaker of POF IV, P2, Topic III “Neuromorphic Computing and Network Dynamics”
Sept 2018	Co-organizer of the HBP CDP4 Workshop “Visuo-Motor Integration”
July 2018	PhD committee for Jan Hahne ‘Waveform-relaxation methods for ordinary and stochastic differential equations with applications in distributed neural network simulations’, University of Wuppertal, Germany
March 2018	One of two representatives of Jülich Research Centre in Helmholtz Planning group on Data Science (Incubator Workshop), Berlin,

	Germany
2018	Head of the PGI-12 (Neuromorphic Computing) structural committee, Jülich Research Centre, Germany
From 2017	Member of International Advisory Board of NeuroMat, University of Sao Paulo, Brazil
From 2017	Member of the Center for Simulation and Data sciences (CSD) 'Strukturkommission', Jülich Research Centre, Germany
Nov 2017	PhD committee for Hesam Setareh 'Neural assemblies as core elements for modeling neural networks in the brain´, EPFL, Lausanne, Switzerland
May 2017	Presenter at "Abend der Wissenschaft" of the German Parliamentary Society, Berlin, Germany
May 2017	One of two representatives of Jülich Research Centre in Helmholtz Planning group on Data Science (Incubator Workshop), Berlin, Germany
April 2017	Member of HPB education programme, Vienna, Austria
From 2017	Member of the Scientific Advisory Board for the Center for Doctoral Studies (CDS), RWTH Aachen, Germany
Oct 2016	PhD committee for Martin Angelhuber 'The Neuronal Circuitry of Fear Conditioning: Computing at the Interface Between Cortex and Striatum´, University of Freiburg, Germany
2016-2018	Chair of the Doctoral Committee, Jülich Research Centre
2015	Managing Director of the Institute of Advanced Simulation (IAS)
2013 – 2014	Managing Director of the Institute of Neuroscience and Medicine (INM)
Mar 2016	SmartStart Teaching Conference, Schloss Herrenhausen, Hannover, Germany
Sep 2014	PhD committee for Ivan Raikow 'Language-Oriented Programming in Computational Neuroscience', University of Antwerpen, Antwerpen, Belgium
Sep 2014	Member of the tenure track committee Prof. Sen Cheng, Ruhr University Bochum, Bochum, Germany
Sep 2014	PhD committee for Hazem Toutounji, 'Homeostatic Plasticity in Input-Driven Dynamical Systems', University of Osnabrück, Osnabrück, Germany
May 2014	PhD committee for Sven Jahnke, 'Neural Networks with Nonlinear Couplings – Computing with Synchrony', Max Planck Institute for Biophysical Chemistry, Göttingen, Germany
From 2014	Guidance of INM 'Raumkommission'
Nov 2013	Member of the HBP Education Program Committee
From 2012	Member of the board of directors of the NEST Initiative
2012	Founding member of the NEST Initiative
Jun 2011	Associate editor of Frontiers in Neuroinformatics and Frontiers in Computational Neuroscience
2010 – 2013	Member of board of directors of the Computational Neuroscience (CNS) conference
2008	Founding member of oversight committee of INCF program on

	Large-scale Modeling Standard Establishment
2006 – 2008	Feasibility study Whole Brain Simulation Project within the Japanese Peta-Scale computing project
2006 – 2009	Member of program committee of the Computational Neuroscience (CNS) conference
2006	Listed Collaborator of the Research School in Systems Biology at the Norwegian University of Life Sciences (UMB), Ås, Norway
2004	Member of search committee for PhD students and Postdocs, BCCN Freiburg
2004	PI and founding member of Bernstein Center for Computational Neuroscience (BCCN), 3 projects
Apr 2004	Member of PhD committee, Malaga, Spain
Sep 2003	Organizer of Computational Neuroscience Course of the German Society for Neuroscience (NWG), Göttingen, Germany
Jun 2013	PhD thesis of Javier Baladron 'Exploring the neural codes using parallel hardware', Inria Sophia Antipolis, France
Jun 2003	Organizer of workshop "Self-Organization of Synfire Networks as a Substrate for Higher Brain Function?", Freiburg, Germany
2003	Coordinator conversion of facilities at location Hansastrasse 9a (BCCN Freiburg) to computational neuroscience lab
2003 – 2006	Scientific coordinator high-performance computing, BCCN Freiburg
Sep 2003	Censor at MSc committee, Ås Norway
2002 – 2003	Co-coordinator of proposal for Bernstein Center for Computational Neuroscience (BCCN) Göttingen 9.3 M Euro
Sep 2002	Organizer of workshop on Theory and Simulation of Cortical Neural Networks, Kappel, Germany
Sep 2001	Organizer of workshop on Synfire Chains, Gütenbach, Germany (
2001	Completion of negotiations towards a cooperation of several labs and an Industrial partner (Honda Research Institute Europe) on the development of technology for the simulation of neural systems (NEST)
Dec 2000	Co-organizer of workshop on Parallel Simulation Methods for Neural Networks, Freiburg, Germany
1999 – 2000	Restructuring of local (Max-Planck-Institute) system administration towards competitive scientific computing (incl. recruitment of one expert on parallel computing, one professional system administrator)

9. Teaching

Schools:

Mar 2018	EITN Spring School, Paris, France
Mar 2018	Necessity and feasibility of large-scale neuronal network simulations, 49th IFF Spring School “Physics of Life”, Jülich, Germany
Nov 2015	Lecture: Necessity and feasibility of brain-scale simulations: steps in the European Human Brain Project, Lecture at University of Chile, Santiago, Chile
Aug 2015	Education School: Future Computing, 2nd HBP School, Obergurgl, Austria
Sept 2014	Simulation of brain-scale neuronal networks at cellular and synaptic resolution, 1st HBP School, Alpbach, Austria
Oct 2013	‘Tutorial From local to brain-scale models at cellular and synaptic resolution, San Pedro de Atacama, Chile
Oct 2013	Tutorial Simulating neuronal networks with NEST, San Pedro de Atacama, Chile
Dec 2011	Cape Town School of Computational Neurosciences, Kapstadt
Jan 2010	Faculty at Latin American Summer School in Comp Neurosci & Biomed Applications, Valparaiso, Chile
Dec 2007	Faculty at E.R. Caianiello International School on Neural Nets, Erice, Sicily, Italy
Sep 2007	Faculty at Computational Neuroscience Course of the German Society for Neuroscience (NWG), Göttingen, Germany
Jun 2007	Faculty at Okinawa Computational Neuroscience Course (OCNC), Okinawa, Japan
Aug 2006	Faculty at Advanced Course in Computational Neuroscience, Arcachon, France
Aug 2005	Faculty at Advanced Course in Computational Neuroscience, Arcachon, France
Jan 2005	Faculty at summer school Advanced Scientific Computing, Drakensberg, South Africa
Sep 2004	Organizer and faculty at Computational Neuroscience Course of the German Society for Neuroscience (NWG), Göttingen, Germany
Aug 2004	Faculty at Advanced Course in Computational Neuroscience, Obidos, Portugal (NEST introduced as official tool)
Aug 2003	Tutor at Advanced Course in Computational Neuroscience (4 weeks), Obidos, Portugal
2000 – 2003	Göttinger Woche, yearly lecture (2h) on theoretical neurobiology for high schools

Classes at Universities:

WS 2020/21	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2020/21	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2020	Seminar ‘Cortical Structure and Function’, RWTH Aachen University (2 SWS)
SS 2020	Lecture ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (2 SWS)
SS 2020	Exercise ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (1 SWS)
WS 2019/20	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2019/20	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2019	Seminar ‘Cortical Structure and Function’, RWTH Aachen University (2 SWS)
SS 2019	Lecture ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (2 SWS)
SS 2019	Exercise ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (1 SWS)
WS 2018/19	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2018/19	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2018	Seminar ‘Cortical Structure and Function’, RWTH Aachen University (2 SWS)
SS 2018	Lecture ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (2 SWS)
SS 2018	Exercise ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (1 SWS)
WS 2017/18	Lecture at ‘Simulation Science Seminar’, RWTH Aachen University
WS 2017/18	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2017/18	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2017	Seminar ‘Cortical Structure and Function’, RWTH Aachen University (2 SWS)
SS 2017	Lecture ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (2 SWS)
SS 2017	Exercise ‘Theoretical neuroscience – Correlation structure of neuronal networks’, RWTH Aachen University (1 SWS)
WS 2016/17	Lecture at ‘Simulation Science Seminar’, RWTH Aachen University
WS 2016/17	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)

WS 2016/17	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2016	Lecture `Theoretical neuroscience – Correlation structure of neuronal networks`, RWTH Aachen University (2 SWS)
SS 2016	Exercises `Theoretical neuroscience – Correlation structure of neuronal networks`, RWTH Aachen University (1 SWS)
SS 2016	Seminar ’Cortical Structure and function’, RWTH Aachen University (2 SWS)
WS 2015/16	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2015/16	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2015	Seminar ’Cortical Structure and function’, RWTH Aachen University (2 SWS)
SS 2015	Exercises `Theoretical neuroscience – Correlation structure of neuronal networks`, RWTH Aachen University (1 SWS)
SS 2015	Lecture `Theoretical neuroscience – Correlation structure of neuronal networks`, RWTH Aachen University (2 SWS)
WS 2014/15	Exercises ‘Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
WS 2014/15	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
SS 2014	Lecture Theoretical neuroscience - Correlation structure of neuronal networks, RWTH Aachen University (2 SWS)
SS 2014	Exercise Theoretical neuroscience - Correlation structure of neuronal networks, RWTH Aachen University (1 SWS)
WS 2013/14	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
WS 2013/14	Exercises ’Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
SS 2013	Lecture ‘Cortical Structure and Function – Vision, Action, Interaction’, RWTH Aachen University (2 SWS)
WS 2012/13	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
WS 2012/13	Exercises (Python) ’Introduction to Computational Neuroscience’, RWTH Aachen University (2 SWS)
SS 2012	Seminar ’Cortical Structure and function’, RWTH Aachen University (2 SWS)
WS 2011/12	Lecture ‘Introduction to Computational Neuroscience’, RWTH Aachen University (1 SWS)
WS 2011/12	Lab course ’Introduction to Scientific Programming’ RWTH Aachen University (2 SWS)
WS 2011/12	Introduction to Computational Neuroscience, RWTH Aachen University (1 SWS)
WS 2009/10	Introduction to Computational Neuroscience, Saitama University, Japan (8h)
WS 2006/07	Two weeks course Introduction to Scientific Computing, Albert-Ludwigs University, Freiburg

SS 2006	Weekly 2h lecture Computational Neuroscience (with S. Rotter), Albert-Ludwigs University, Freiburg
Aug 2005	Simulation of biological neural networks, Albert-Ludwigs University, Freiburg (two weeks course, equiv. 1 semester 5h/week)
SS 2005	Weekly lecture Computational Neuroscience (with S. Rotter), Albert-Ludwigs University, Freiburg
WS 2004/05	Two weeks course Introduction to Scientific Computing, Albert-Ludwigs University, Freiburg
Apr 2004	Simulation of biological neural networks, Albert-Ludwigs University, Freiburg, Germany (two weeks course, equiv. 1 semester 5h/week)
Apr 2003	Simulation of biological neural networks, Albert-Ludwigs University, Freiburg, Germany (two weeks course, equiv. 1 semester 5h/week)
WS 2001/02	Weekly seminar 'Graph Theory for Dummies', Albert-Ludwigs University, Freiburg
2001–2000	Contribution to Biophysics Laboratory (1 day), Albert-Ludwigs University, Freiburg
1999 –2003	Journal Club, weekly, Albert-Ludwigs University, Freiburg
1999 –2003	Computational Neuroscience seminar, weekly, Albert-Ludwigs University, Freiburg

10. Invited Talks

Oct 2020	Open cortical models at full density in real time, Bernstein Seminar (virtual), Freiburg, Germany
Apr 2020	Neuronal network models as building blocks and for the classroom, NeuroMat/NeuroMod webinars 2020, Sao Paulo, Brazil
Mar 2020	Brain models as research platforms on heterogeneous computer architectures, International symposium on "New horizons of computational science with heterogeneous many-core processors" RIKEN Wako, Japan *(cancelled due to Corona)*
Dec 2019	Open cortical multi-area mode las research platform, Neural Computation Unit, Okinawa Institute of Science and Technology (OIST), Japan
Oct 2019	Open Cortical Multi-Area Model at Cellular Resolution, 14th MEI3 Center International Symposium, Electronics and Information Technologies for Bionic Human, Osaka University NAKANOSHIMA center, Japan
Oct 2019	Detailed Cortical Models as Open Platforms, Kyoto University, Japan
Sep 2019	Cortical Microcircuit Model at Cellular Resolution, Workshop "Brain Circuit Insight: From brain circuit models to brain circuit insights", Bernstein Conference 2019, Berlin, Germany
Jul 2019	Simulation of brain-scale neuronal networks at cellular resolution, Forschungssymposium, Department of Psychiatry, Psychotherapy and Psychosomatics, School of Medicine, RWTH Aachen

	University, Germany
Jul 2019	Open Cortical Multi-Area Model at Cellular Resolution, Workshop W9 “Neural Multiplexed Coding, Coexistence of Multimodal Coding Strategies in Neural Systems” 28th Annual Computational Neuroscience Meeting CNS 2019, Barcelona, Spain
Jun 2019	Closing Remarks, NEST Annual Conference 2019, Norwegian University of Life Sciences (NMBU), Ås, Norway
Jun 2019	Computational Neuroscience and Neuromorphic Computing: Foundations of Next-Generation Artificial Intelligence, Focus Session, ISC 2019, Frankfurt
Mar 2019	Construction and Simulation of an Open Cortical Multi-Area Model at Cellular Resolution, Neuro-inspired Computing, The University of Tokyo, Japan
Mar 2019	Open Collaborative Brain-Scale Neuronal Network Models at Cellular Resolution, Systems Neuroscience Spring School "Statics and Dynamics of Neural Systems", Kyoto, Japan
Mar 2019	Requirements on Neuromorphic Computing from Brain-Scale Neuronal Networks, R-WoNC19, RIKEN International Workshop on Neuromorphic Computing AICS, Kobe, Japan
Feb 2019	Digitized Workflows for Open Collaborative Brain-Scale Neuronal Network Models, Workshop “Neurological Computer-Simulations”, MECS, Lüneburg, Germany
Jan 2019	Open Collaborative Brain-scale Neuronal Network Models At Cellular Resolution, Universidad de Chile, Santiago, Chile
Nov 2018	Bottom-Up Multi-Area Models At Cellular Resolution With Digitized Workflows Constrain Models of Brain Function, HBP Workshop, EITN, Paris, France
Nov 2018	Multi-Area Model At Cellular Resolution As Data Integrator, 1st Workshop of the Simulation Laboratory of NeuroMat, “Rigorous Mathematical and Simulation Modelling in Neuroscience: Complementary and Synergistic Interactions, Sao Paulo, Brazil
Oct 2018	Multi-Area Model At Cellular Resolution As Data Integrator, Brain Research Center, Bar-Ilan University, Israel
Oct 2018	Artificial and Natural Neural Networks: From Brain Architecture to Neuromorphic Computers, Inauguration of the Helmholtz Tel Aviv Office, Israel
Oct 2018	WP4.2 “Simplified Spiking Models of Different Brain Areas” --guiding construction of the platform, Developing collaborations and model implementations between SP4 and platforms, HBP Summit, Maastricht, Netherlands
Oct 2018	Overcoming the complexity barrier of brain modeling by digitization and collaboration, HBP colloquium, Jülich Research Centre, Germany
Oct 2018	Structure paper PGI-12, Neuromorphic Computing (NC), 615. Sitzung der Hauptkommission des Wissenschaftlich-Technischen Rates, Jülich Research Centre, Germany
Oct 2018	Neuromorphic Computing at Jülich, Board of Directors Meeting, Joint Research Institute of Functional Materials and Electronics, Jülich Research Centre, Germany
Sep 2018	Künstliche Intelligenz (KI) der Zukunft: Neuromorphe Systeme, Visit of the federal minister for Education and Research Anja

Karliczek, Jülich Research Centre, Germany

Sep 2018 Multi-area models as data integrators and building blocks, 13th Neural Coding Conference, Torino, Italy

Aug 2018 Simulation and analysis of large-scale spiking neuronal networks: insights, technology, and reproducibility through digitized workflows, workshop “New horizons on neuromorphic computing with memristive devices”, Ischia, Italy

Jul 2018 Reusable publication of a cortical multi-area model at cellular resolution, CNS 2018 Workshop “Integrative theories of cortical function”, Seattle, USA

Jul 2018 POF IV- Outlook, INM/ICS Annual Retreat, Jülich Research Centre, Germany

Apr 2018 A Brain Scale model of macaque visual cortex at cellular and synaptic resolution, SBMT 15th Annual Congress, Los Angeles, USA

Mar 2018 Simulation of the Multi-Scale Architecture of Macaque visual cortex on Supercomputers, RIKEN BSI, Wako, Japan

Feb 2018 Science cases for interactive Supercomputing Simulation in Computational Neuroscience, Fenix/ICEI Co-Design Workshop, ETH Zürich, Switzerland

Feb 2018 Towards Simulation of Brain Networks at Exascale, “New Horizons of Computational Science with Heterogeneous Many-Core Processors” international Symposium, RIKEN BSI, Wako, Japan

Jan 2018 Benchmarking neuromorphic vs. HPC hardware Statement HPAC: NEST, HBP SP7 & SP9 discussion and planning Meeting, Hilton Frankfurt Airport, Germany

Dec 2017 Aspects of the multi-scale hierarchical organization of macaque visual cortex, Workshop “Random Structures on the Brain”, Leiden, Netherlands

Nov 2017 Advances in technology for brain-scale simulations on exascale computers, AICS, RIKEN Advanced Institute for Computational Science, Kobe, Japan

Nov 2017 NEST, brain building blocks integrated with theory, High Performance Computing (HPC) Resources for Parallel Simulations and Data Analysis: NSG and HPAC, SfN Satellite Workshop, Washington D.C., USA

Nov 2017 The Human Brain Project – wo stehen wir in der Entwicklung bei der Nachbildung des menschlichen Gehirns? Workshop „Macht uns die Digitalisierung zum Supermenschen?“ Zürich, Switzerland

Oct 2017 NeuroMat challenges in high-performance computing and stochastic modeling, NeuroMat Workshop “Random Structures in the Brain”, Sao Paulo, Brazil

July 2017 A brain-scale model of macaque visual cortex at cellular and synaptic resolution, CNS*17 Workshop, “Cortical Function: Towards Understanding and Developing Integrative Theories”, Antwerpen, Belgium

Jun 2017 The multi-scale structure and dynamics of macaque visual cortex at cellular and synaptic resolution, Workshop “Brain Dynamics on Multiple Scales”, Max-Planck-Institute for the Physics of Complex Systems, Dresden, Germany

May 2017 Modeling and simulation of large neuronal networks, Neurosur

	Workshop, Santiago de Chile, Chile
April 2017	Mathematische Modelle für neuronale Schaltkreise, Leopoldina, Wissenschaftskolleg für Journalisten, Jülich, Germany
June 2017	The multi-scale structure and dynamics of macaque visual cortex at cellular and synaptic resolution, Workshop “Brain Dynamics on Multiple Scales”, MPI for the Physics of Complex Systems, Dresden, Germany
Jan 2017	Progress and challenges in bottom-up network modelling, SP4 Annual Meeting, EITN, Paris, France
Jan 2017	HBP WP4.2 Generic Models of Brain Circuits, HBP SP4 Annual Meeting, EITN, Paris, France
Oct 2016	Brain-scale simulations at cellular and synaptic resolution, International Workshop Vision Over Vision: man, monkey, machine, and network models. Osaka, Japan
Aug 2016	Multi-area model of macaque visual cortex at cellular and synaptic resolution, 12th International Neural Coding Workshop, Cologne, Germany
Jun 2016	Progress and challenges in bottom-up network modelling, MONA2 – Modelling Neural Activity, Waikoloa, Hawaii
Jun 2016	Introduction to the Network Simulator NEST SP6, SP7, HBP CDP4 Kickoff Meeting, EITN, Paris, France
Jun 2016	Technology for Brain Scale Simulation at Cellular Resolution, PASC16 Conference, Lausanne, Switzerland
Apr 2016	Necessity and feasibility of brain-scale simulation at cellular and synaptic resolution, Workshop on High-Performance Computing, Sao Paulo, Brazil
Feb 2016	Simulations of macaque cortical networks at cellular and synaptic resolution, Graduate School of Frontier Bioscience, Osaka University, Osaka, Japan
Feb 2016	Necessity and feasibility of brain-scale simulations at cellular and synaptic resolution, 6th AICS International Symposium, Kobe, Japan
Feb 2016	Multi-area multi-layer models of cortical networks, EITN, HBP SP3-SP4 Meeting, Paris, France
Feb 2016	Brain-scale simulations of cortical networks at cellular and synaptic resolution, SFB 936 Multi-Site Communication in the Brain, Hamburg, Germany
Dec 2015	Towards multi-layered multi-area models of cortical networks, BIRS Workshop, Banff Centre, Calgary, Canada
Nov 2015	Computational Neuroscience:interplay of structure and dynamics, Conversations in Neuromedicine, BNI Seminar Series, University of Chile, Santiago, Chile
Oct 2015	Role of biophysical modelling, Workshop “Challenges in Linking Statistical and Mathematical Neuroscience”, SAMSI, Boston, USA
Aug 2015	Brain-Scale simulations at cellular and synaptic resolution: necessity and feasibility, CCNS Opening Workshop, SAMSI Hamner Conference Center Auditorium, Durham, USA
Aug 2015	Simulation of networks or My brain is finite, 2nd HBP School – Future Computing, Obergurgl, Austria

July 2015	Simulation of brain-scale neuronal networks at cellular and synaptic resolution, Workshop “Unraveling Mesoscopic Coding Principles Using Ultra-High Magnetic Field MRI and Neural Network Modelling”, Salerno, Italy
June 2015	Deterministic neural networks as sources of uncorrelated noise for probabilistic computations, HBP SP9, Fuerberg workshop 2015, Fuerberg, Austria
June 2015	Deterministic neural networks as sources of uncorrelated noise for probabilistic computations, Bernstein Sparks Workshop, Tuebingen, Germany
March 2015	Are we building the right thing? – Requirements from theory for simulation environments and neuromorphic computing, 1st community workshop HBP network simulator, Paris, France
Jan 2015	Computational neuroscience emerging from the dark ages, Workshop on “Mediafor Simulating the brain”, Lüneburg, Germany
Dec 2014	Computational network modeling, BMFZ Meeting Brain networks – challenges and perspectives, Düsseldorf, Haus der Universität, Düsseldorf, Germany
Dec 2014	Simulation of brain-scale neuronal networks at cellular and synaptic resolution, 4th HPC-Status Conference of the Gauß-Allianz, RWTH Aachen, Aachen, Germany
Nov 2014	NEST HPC status - technology and theory. BrainScaleS Demo Workshop, CNRS-UNIC campus, Gif-sur-Yvette, France
Nov 2014	Simulation of brain-scale neuronal networks at cellular and synaptic resolution, Maison de la Simulation, CEA, Gif-sur-Yvette, France
Oct 2014	Spiking network simulation code for the peta scale, 4th Frontiers in Neuromorphic Computing Conference, BrainScaleS, Heidelberg, Germany
Oct 2014	Dynamics of cortical neuronal networks at cellular resolution, Fachgruppe Physik, RWTH Aachen, Germany
Oct 2014	Panel discussion, Berlin Office Helmholtz Association, Berlin, Germany
Sep 2014	Status of the Network Simulator NEST, HBP Meeting, Lausanne, Switzerland
Sep 2014	Simulation of brain-scale neuronal networks at cellular and synaptic resolution, NeuroVisionen, Jülich, Germany
Aug 2014	The K computer as an instrument to study brain-scale neuronal networks at microscopic resolution, Fujitsu HPC Forum, Tokyo, Japan
July 2014	Cortical multi-area multi-layer network models: data integration and simulation technology, Allen Institute, Seattle, USA
June 2014	The network simulator of the HBP — NEST, International Supercomputing Conference ISC’14, Leipzig, Germany
May 2014	A full-scale spiking network models, Maastricht, The Netherlands
May 2014	A full-scale spiking model of the local cortical network, Alghero, Italy
April 2014	Towards brain-scale spiking network models, Maastricht, The Netherlands

Mar 2014	My brain is finite, The European Institute for Theoretical Neuroscience (EITN) inauguration, Paris, France
Jan 2014	The correlation structure of local neuronal networks intrinsically results from recurrent dynamics, Jülich Research Center, Germany
Jan 2014	HBP - HUMAN BRAIN PROJECT - SP4: Mathematical and Theoretical Foundations of Brain Research and SP6: Brain Simulation Platform, Dutch Science Organisation NOW, The Hague, The Netherlands
Nov 2013	Numerical challenges in large-scale neuronal network simulations, Bergische Universität Wuppertal, Wuppertal, Germany
Sep 2013	Use cases for interactive supercomputing in computational neuroscience, HBP workshop 'Interactive Supercomputing', Frankfurt Airport, Frankfurt, Germany
Sep 2013	INM-6/IAS-6 activity in Portfolio Theme SMHB, Workshop on 'Cooperation with DKFZ, BioQuant Center, Heidelberg, Germany
Oct 2013	Simulation technology at cellular and synaptic resolution for the largest computers, EU-US workshop on Cortical Processors, IWH Heidelberg, Germany
Oct 2013	From local to brain-scale models at cellular and synaptic resolution, Workshop 'Analysis of electrophysiological signals: Theoretical and practical approaches', San Pedro de Atacama, Chile
Oct 2013	Simulating neuronal networks with NEST, Tutorial, Workshop 'Analysis of electrophysiological signals: Theoretical and practical approaches', San Pedro de Atacama, Chile
Jul 2013	Integrating brain structure and dynamics with spiking neuronal network models, Workshop on Brain Inspired Computing, Cetraro, Italy
Jun 2013	Simulation technology for brain-scale neuronal networks, ISC'13, CCL, Leipzig, Germany
Jun 2013	Modelle kortikaler lokaler Netzwerke – neue Möglichkeiten durch Supercomputer, Psychiatrisch-psychotherapeutische Kolloquien, UK Aachen, Aachen, Germany
May 2013	Minimal cell-type specific model of the cortical microcircuit and critique, OCCAM 2013, Osnabrück, Germany
Mar 2013	A Minimal cell-type specific model of the cortical microcircuit, Dynamics of Neuronal Systems, BCF, Freiburg, Germany
Mar 2013	Relating structure and activity in a full-scale local cortical network model, COSYNE 13, Snowbird, USA
Mar 2013	Some further insights on the correlation structure of cortex and supercomputers as instruments of neuroscience, University of Bern, Department of Physiology, Bern, Switzerland
Jan 2013	Future plans on meso/macro measures from cellular resolution, Workshop on 'Modeling and Analysis of LFP', Thon Hotel Ski, As, Norway
Dec 2012	Aspects of the correlation structure of cortex and new horizons opened by the K supercomputer, RIKEN, Wako City, Japan
Dec 2012	Brain-scale neuronal network simulations on K, Tokyo International Forum, Tokyo, Japan
Oct 2012	Modeling and simulation of large-scale neuronal networks, GRS Aachen, Germany

Sep 2012	NEST's first steps on the Kei computer, Campus Plaza Kyoto, Kyoto, Japan
Aug 2012	Understanding global whisker motion detection through large-scale simulation of the rodent whisker system, Gif-sur-Yvette, France
Aug 2012	Modeling and simulation of large-scale neuronal networks, Schleiden, Germany
Jun 2012	Investigating network dynamics with integrate-and-fire model neurons, Okinawa Computational Neuroscience Course 2012, Okinawa, Japan
May 2012	Decorrelation of neural-network activity by inhibitory feedback, Variance Invariants, Technion, Haifa, Israel
May 2012	Steps towards brain-scale simulations at cellular resolution/ Organization of excitable dynamics in hierarchical neural networks, Jacobs Universität Bremen, Germany
May 2012	Decorrelation by local cortical networks, BCCN Berlin, Germany
May 2012	Active decorrelation in local cortical networks, Nordita, Stockholm, Sweden
Mar 2012	NEST's next steps on the K computer, Kyoto University Tokyo, Japan
Jan 2012	The hierarchical communication architecture of the brain, Frankfurt, Germany
Jan 2012	Numerical problems in abstract spiking neuronal network models, BSC, Barcelona, Spain
Dec 2011	Large-scale neural network simulations, Cape Town School of Computational Neurosciences, Kapstadt, South Africa
Nov 2011	Structure and dynamics of a multi-layered cortical network model DGPPN Kongress 2011, Berlin, Germany
Nov 2011	Bottom-up and top-down approaches in Computational Neuroscience, Kolloquium des Goethe Center for Scientific Computing, Goethe University Frankfurt, Germany
Oct 2011	Excitability and robustness of a multi-layered local cortical network model Bernstein Conference 2011 Freiburg, Germany
Sep 2011	Bottom-up and top-down approaches in Computational Neuroscience, Institut für Neurowissenschaften und Medizin Kognitive Neurologie (INM-3), Jülich, Germany
Sep 2011	Bottom-up and top-down approaches in Computational Neuroscience, German Research School for Simulation Sciences, Jülich, Germany
Sep 2011	INM-6 Computational and Systems Neuroscience, Institut für Neurowissenschaften und Medizin Kognitive Neurologie (INM-3), Jülich, Germany
Jun 2011	Modeling and simulation of large-scale cortical neuronal networks, 25th UMBRELLA SYMPOSIUM Aachen, Germany
Jun 2011	Simulation challenge-simplified neuron models, HPC for Human Brain Simulations, Hamburg, Germany
Jun 2011	Multi-population network models of the cortical microcircuit, The 3rd International Conference on Cognitive Neurodynamics, Hokkaido, Japan
Nov 2010	Spike surrogates based on operational time, 9th International

	Neural Coding Workshop (NC2010), Limassol, Cyprus
Sep 2010	Instantaneous non-linear processing by pulse-coupled threshold units, Workshop on spatio-temporal neuronal computation, Kyoto University, Japan
Sep 2010	Supercomputers as data integration facilities: brain-scale simulations, Neuro 2010, Kobe, Japan
August 2010	Target specificity and the stability of layered cortical network dynamics, GCOE Program Invited Speaker's Seminar, Graduate School of Frontier Biosciences, Osaka University, Japan
May 2010	Perspectives and challenges of brain-scale neuronal network simulations, Institute for Scientific Computing, RWTH Aachen University, Germany
March 2010	Target specificity and the stability of layered cortical network dynamics, Workshop on Computational Neuroscience, Ritsumeikan University, Kusatsu, Japan
Jan 2010	The human brain model network, Mid-Term Review of the Helmholtz Alliance on Systems Biology Heidelberg Germany
Jan 2010	An integrative perspective for FACETS 2, FACETS plenary meeting, Dresden, Germany
Jan 2010	Target type selection and the stability of layered cortical network dynamics, Latin American Summer School in Comp Neurosci & Biomed Applications Valparaiso, Chile
Sep 2009	Perspectives and challenges of large-scale neuronal network simulations, 2nd INCF Congress of Neuroinformatics, Pilsen, Czech Republic
Aug 2009	Large-scale models of cortical dynamics and function, Research Center Juelich, Germany
Aug 2009	Statistical Modeling and Data Analysis for Neural Coding, International Statistical Institutes (ISI) 2009 Meeting in Durban, South Africa
May 2009	Target type selection and the stability of layered cortical network dynamics, Second bilateral German-Japanese Workshop Computational Neuroscience, Berlin, Germany
Jan 2009	Large-scale simulations of plastic neural systems, Fachgruppe Informatik, RWTH Aachen, Germany
Jan 2009	What do we know about STDP?, FACETS Plenary Meeting, Leysin, Switzerland
Jan 2009	A large-scale layered cortical network model integrating present knowledge of potential and functional connectivity, LFP Workshop: Modelling and interpretation of extracellular potentials, Ski, Norway
Dec 2008	Towards brain-scale simulations, John von Neumann Institute for Computing, Juelich, Germany
Dec 2008	Layered large-scale model of the local cortical network, Department of Information & Communication Sciences, Kyoto Sangyo University, Japan
Oct 2008	Perspectives of large-scale cortical simulations, IoN - BSI Joint Research Workshop, Newcastle, United Kingdom
Oct 2008	Intensity approaches to understanding synfire dynamics, Bernstein Workshop Connecting brain activity across levels of resolution, Freiburg, Germany

Sep 2008	Dithering in operational time, DIP-Workshop on Compositionality, Informatics Forum, Edinburgh, United Kingdom
Aug 2008	Dithering in operational time, Patterns and Synfire Chains Workshop Institute of Neuroscience, Newcastle, United Kingdom
Jul 2008	From data to mechanisms: Dynamics and function of cortical networks, Centre for Integrative Neuroscience, University of Tuebingen, Germany
Jun 2008	From data to mechanisms: Dynamics and function of cortical networks, Donders Institute for Neuroscience, Radboud University, Nijmegen, Netherlands
Mar 2008	Large-scale simulations of plastic neural systems, Colloquium of the Section of Computer Science, RWTH Aachen, Germany
Feb 2008	Large scale simulations of plastic neural systems, Helmholtz Russian-German Workshop on Systems Biology, Moscow, Russia
Jan 2008	Integration of layer-specific connectivity data sets, FACETS Plenary Meeting, Debrecen, Hungary
Oct 2007	Worms on carpets: detecting synfire chain activity using massively parallel spike train recording, Technion, Haifa, Israel
Oct 2007	Worms on carpets: detecting synfire chain activity using massively parallel spike train recording, Bar Ilan University, Ramat Gan, Israel
Sep 2007	Large scale simulations of cortical neuronal networks, 30th Annual Meeting, Japanese Society for Neuroscience, NEURO 2007, Yokohama, Japan
Aug 2007	Large scale simulations of plastic cortical networks, Topical Problems of Biophotonics, Nizhny Novgorod, Russia
Jul 2007	Dynamics of plastic recurrent cortical networks, Neuro-Computing meeting of the electrical engineering society of Japan, Kyoto, Japan
Apr 2007	Large-scale simulations of neuronal systems, Workshop of Helmholtz Initative Systems Biology: The Human Brain Model, Juelich, Germany
Mar 2007	Spike-timing dependent plasticity in balanced random networks, 31st Göttingen Neurobiology Conference, Göttingen, Germany
Feb 2007	Spike-timing dependent plasticity in balanced random networks, Faculty of Engineering, Sangyo University, Kyoto, Japan
Dec 2006	Continuous spike times and efficiency in parallel simulations with NEST, 1st INCF workshop on large-scale modeling of the nervous system, Stockholm, Sweden
Dec 2006	From data to mechanisms: dynamics and function of cortical networks, BCCN Symposium, Freiburg, Germany
Oct 2006	Spike-timing dependent plasticity in balanced random networks, Workshop on Mathematical aspects of brain functions, compositionality and synchronization, Accademia Nazionale Dei Lincei, Rome, Italy
Apr 2006	The study of neuronal networks is Systems Biology, Helmholtz-Initiative Systems Biology, Frankfurt Airport Conference Center, Frankfurt, Germany
Apr 2006	Spike-timing dependent plasticity in balanced random networks, The Banbury Center, Cold Spring Harbor Laboratory, Cold Spring

	Harbor NY, USA
Nov 2005	Spike synchronization by fast input transients, Institute for Theoretical Biology, Humboldt University, Berlin, Germany
Sep 2005	Spike synchronization by fast input transients, Mediterranean Institute of Cognitive Neuroscience, Marseille, France
Sep 2005	Models of spike synchronization in cortical architectures, RIKEN Brain Science Institute, Wako City, Japan,
Apr 2005	NEST: an introduction, FACETS Simulation Meeting, Graz, Austria
Jan 2005	Parameters of Spike Synchronization in Feed-Forward Subnetworks, EPFL Lausanne, Switzerland
Nov 2004	Spike Synchronization in Cortical Neural Networks, Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, Germany
Oct 2004	Interaction of synchronous spiking and background activity, BMBF Bernstein Centers for Computational Neuroscience Opening Symposium, Berlin, Germany
Jul 2004	Spike synchronization in cortical neural networks, Center for Systems Neuroscience, Göttingen, Germany
Dec 2003	Präzision auf unzuverlössiger Grundlage: Modelle zeitlicher Organisation neuronaler Aktivität, Ringvorlesung Faculty of Biology, Freiburg, Germany
Jun 2003	The Spike Intensity Caused by Supra-Threshold Input Transients, Albert-Ludwigs-University, Freiburg, Germany
Apr 2003	Correlation-Structure and Function of Cortical Networks, CNRS Section 7, Paris, France
Mar 2003	Correlation-Structure and Function of Cortical Networks, CNRS Section 45, Paris, France
Nov 2002	Modeling the Correlation Structure of Cortical Neural Networks, Institut des Sciences Cognitives CNRS-UCBL, Lyon, France
Oct 2002	Stable Propagation of Synchronous Spiking in Feed-Forward Cortical Network Models, Hebrew University, Dept. of Physiology, Jerusalem, Israel
Oct 2002	The Simultaneous Spread of Spike Rate and Correlation in Cortical Feed-Forward Networks, Weizmann Institute of Science, Rehovot, Israel
Oct 2002	The Simultaneous Spread of Spike Rate and Correlation in Cortical Feed-Forward Networks, Interdisciplinary Center for Neural Computation (ICNC), Jerusalem, Israel
Jun 2002	Parameter Space and Variability of Synchronous Spiking in Cortical Neurons, CRNC-CNRS, Marseille, France
Nov 2001	NEST: An Environment for Neural Systems Simulations, (held by Marc-Oliver Gewaltig) Heinz-Billing-Award Symposium, GWDG Göttingen, Germany
Sep 2001	Parameter Space of Synfire Activity, 6th International Tamagawa Brain Forum, Breisach, Germany
Nov 2001	Synchronous and Asynchronous States in Feed-Forward Cortical Networks, University of Maryland, College Park, USA
Nov 2001	Variability of Synchronous Spiking and the Ground State of Synfire Chains, University of Pennsylvania, Philadelphia, USA

Jun 2001	The Ground State of Synfire Activity, Initiative for Neural Simulation Techniques 1st Meeting, Honda R&D Europe, Offenbach, Germany
Jun 2001	Analysis of Spike Synchronization in Feed-Forward Cortical Networks, Institute for Theoretical Physics, Georg-August University, Göttingen, Germany
Jan 2001	Analysis of Spike Synchronization in Feed-Forward Cortical Networks, Special Workshop on Synfire Chains, Interdisciplinary Center for Neural Computation, Jerusalem, Israel
Nov 2000	Analysis of Spike Synchronization in Feed-Forward Cortical Networks, Brown University, Providence, USA
Oct 2000	Conditions for Synchronous Spiking in Feed-Forward Networks, Max-Planck-Institute for Mathematics in the Sciences, Leipzig, Germany
Sep 2000	Spike Synchronization in Cortical Networks, Workshop Brain OS/Brain Computing, Honda R&D Europe, Offenbach, Germany
Jul 1999	High Level Languages for Scientific Computing: Mathematica and Matlab, Institute of Andalusia for Image Processing, University of Malaga, Spain
Feb 1999	Propagation of Synchronous Activity in the Neocortex, Max-Planck-Institut fuer Strömungsforschung, Göttingen, Germany
Apr 1998	Propagation of Synchronous Activity in the Neocortex, Max-Planck-Institute for Brain Research, Frankfurt, Germany
Oct 1997	Propagation of Synchronous Activity in the Neocortex, CRNC-CNRS, Marseille, France
Dec 1996	A Two-Dimensional State Space Analysis of Cortical Synfire Activity, Israel
	Society for Neuroscience 5th meeting, Eilat, Israel
Jul 1995	Characterization of Synfire Activity by Propagating ’Pulse Packets’
	Computation and Neural Systems 4th annual meeting (CNS*95), Monterey, USA

11. Scientific Stays

(without conferences and meetings)

Jan 2019	Department of Neuroscience, Universidad de Chile, Santiago
Apr 2016	G. Einevoll & H.E. Plesser Norwegian Univ. of Life Sciences, Aas, Norway
May 2015	G. Gerstein University of Pennsylvania, USA
Aug 2014	G. Gerstein University of Pennsylvania, USA
Jan 2009	G. Einevoll & H.E. Plesser Norwegian Univ. of Life Sciences, Aas, Norway
May 2008	G. Gerstein University of Pennsylvania, USA
Feb 2006	G. Einevoll & H. E. Plesser Agricultural Univ. Norway, Aas, Norway

Sep 2005	G. Gerstein University of Pennsylvania, USA
Mar 2005	T. Flash Weizmann Inst. of Science, Rehovot, Israel
Aug 2004	H. E. Plesser Agricultural Univ. Norway, Aas, Norway
Apr 2004	A. Riehle CNRS, Marseille, France
May 2004	H. E. Plesser Agricultural Univ. Norway, Aas, Norway
Oct 2002	M. Abeles Hebrew University, Jerusalem (ICNC stipend)
Jun 2002	A. Riehle CNRS, Marseille, France
Nov 2001	G. Gerstein University of Pennsylvania, USA
Nov 2000	G. Gerstein University of Pennsylvania, USA
Jul 1999	F. deVico University of Malaga, Spain
Aug 1998	A. Riehle CNRS, Marseille, France
Apr 1998	S. Grün MPI for Brain Research, Frankfurt, Germany
Jul 1997	M. Abeles Hebrew University, Jerusalem, Israel
Feb 1997	M. Abeles Hebrew University, Jerusalem, Israel

12. Publications

Researcher ID: H-3722-2013

ORCID: 0000-0002-2308-5727

Metrics

h-index: 45, total citations: 10655 (Google Scholar, update: Nov 2020)

Peer-reviewed Papers

2020

Jordan J, Helias M, **Diesmann M**, Kunkel S (2020) Efficient communication in distributed simulations of spiking neuronal networks with gap junctions. Frontiers in Neuroinformatics 14:12. doi.org/10.3389/fninf.2020.00012

Senk J, Korvasova K, Schuecker J, Hagen E, Tetzlaff T, **Diesmann M**, Helias M(2020) Conditions for wave trains in spiking neural networks. Phys. Rev. Research 2:023174 doi:10.1103/PhysRevResearch.2.023174

2019

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

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

Jordan J, Petrovici MA, Breitwieser O, Schemmel J, Meier K, **Diesmann M**, Tetzlaff T (2019) Deterministic networks for probabilistic computing. Sci Rep 9: 18303. doi:10.1038/s41598-019-54137-7

Kobayashi R, Kurita S, Kurth A, Kitano K, Mizuseki K, **Diesmann M**, Richmond BJ, Shinomoto S (2019) Reconstructing neuronal circuitry from parallel spike trains Nature Communications. 10:4468. doi:10.1038/s41467-019-12225-2

2018

Senk J, Carde C, Hagen E, Kuhlen TW, **Diesmann M**, Weyers B (2018) VIOLA—A Multi-Purpose and Web-Based Visualization Tool for Neuronal-Network Simulation Output. Frontiers in Neuroinformatics 2:75. doi:10.3389/fninf.2018.00075

Schmidt M, Bakker R, Shen K, Bezgin G, **Diesmann M**, van Albada SJ (2018) A multi-scale layer-resolved spiking network model of resting-state dynamics in macaque visual cortical areas. PLOS Computational Biology 14:e1006359. doi:10.1371/journal.pcbi.1006359

van Albada SJ, Rowley AG, Senk J, Hopkins M, Schmidt M, Stokes AB, Lester DR, **Diesmann M**, Furber SB (2018) Performance comparison of the digital neuromorphic

hardware SpiNNaker and the neural network simulation software NEST for a full-scale cortical microcircuit model. Frontiers in Neuroscience 12:291 doi:10.3389/fnins.2018.00291

Bouchard KE, Aimone JB, Chun M, Dean T, Denker M, **Diesmann M**, Donofrio DD, Frank LM, Kasthuri N, Koch C, Rübel O, Simon HD, Sommer FT, Prabhat (2018) International Neuroscience Inititatives through the Lens of High-Performance Computing. IEEE Computer 51:50-59. doi:10.1109/MC.2018.2141039

Denker M, Zehl L, Kilavik BE, **Diesmann M**, Brochier T, Riehle A, Grün S (2018) LFP beta amplitude is linked to mesoscopic spatio-temporal phase patterns. Scientific Reports 26, 8(1), doi:10.1038/s41598-018-22990-7

Jordan J, Ippen T, Helias M, Kitayama I, Sato M, Igarashi J, **Diesmann M**, Kunkel S (2018) Extremely Scalable Spiking Neuronal Network Simulation Code: From Laptops to Exascale Computers. Frontiers in Neuroinformatics 11.75. doi:10.3389/fninf.2018.00002

Kass RE, Amari S, Arai K, Brown EN, Diekman CO, **Diesmann M**, Doiron B, Eden U, Fairhall A, 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 Review of Statistics and Its Application 5:183-214. doi: 10.1146/annurev-statistics-041715-033733

Krishnan J, Porta Mana PGL, Helias M, **Diesmann M**, Di Napoli E (2018) Perfect Detection of Spikes in the Linear Sub-threshold Dynamics of Point Neurons. Frontiers in Neuroinformatics 11:75. doi:10.3389/fninf.2017.00075

Maksimov A, **Diesmann M**, van Albada SJ (2018) Criteria on balance, stability and excitability in cortical networks for constraining computational models. Front Comput Neurosci. doi:10.3389/fncom.2018.00044

Schmidt M, Bakker R, Hilgetag CC, **Diesmann M**, van Albada SJ (2018) Multi-scale account of the network structure of macaque visual cortex. Brain Structure and Function 223.3. doi:10.1007/s00429-017-1554-4

Senden M, Schücker, J, Hahne J, **Diesmann M**, Goebel R (2018) [Re] A neural model of the saccade generator in the reticular formation. ReScience 3:1-12 doi: 10.5281/zenodo.1241004

2017

Hahne J, Dahmen D, Schücker J, Frommer A, Bolten M, Helias M, **Diesmann M** (2017) Integration of continuous-time dynamics in a spiking neural network simulator. Frontiers in Neuroinformatics 11. doi: 10.3389/fninf.2017.00034

Ippen T, Eppler JM, Plesser HE, **Diesmann M** (2017) Constructing neuronal network models in massively parallel environments. Frontiers in Neuroinformatics 11. doi: 10.3389/fninf.2017.00030

Schücker J, Schmidt M, van Albada SJ, **Diesmann M**, Helias M (2017) Fundamental activity constraints lead to specific interpretations of the connectome. PLOS Computational Biology 13:e1005179. doi: 10.1371/journal.pcbi.1005179

2016

Hagen E, Dahmen D, Stavrinou ML, Lindén 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) pp. 4461 – 4496. doi: 10.1093/cercor/bhw237

Maksimov A, van Albada SJ, **Diesmann M** (2016) [Re] Cellular and Network Mechanisms of Slow Oscillatory Activity (<1 Hz) and Wave Propagations in a Cortical Network Model. Rescience. doi:10.5281/zenodo.161526

Bouchard KE, Aimone JB, Chun M, Dean T, Denker M, **Diesmann M**, Donofrio DD, Frank LM, Kasthuri N, Koch C, Ruebel O, Simon HD, Sommer FT, Prabhat (2016) High-Performance Computing in Neuroscience for Data-Driven Discovery, Integration and Dissemination. Neuron 92(3), pp. 628-631. doi: 10.1016/j.neuron.2016.10.035

Bos H, **Diesmann M**, Helias M (2016) Identifying Anatomical Origins of Coexisting Oscillations in the Cortical Microcircuit. PLoS Comput Biol 12(10): e1005132. doi:10.1371/journal.pcbi.1005132

Grytskyy D, **Diesmann M**, Helias M (2016) Reaction-diffusion-like formalism for plastic neural networks reveals dissipative solitons at criticality. Phys Rev E 93, 062303. doi:10.1103/PhysRevE.93.062303

Pfeil T, Jordan J, Tetzlaff T, Grübl A, Schemmel J, **Diesmann M,** Meier K (2016) Effect of Heterogeneity on Decorrelation Mechanisms in Spiking Neural Networks: A Neuromorphic-Hardware Study. Phys Rev X 6, 021023. doi:10.1103/PhysRevX.6.021023

2015

Trengove C, **Diesmann M**, Van Leeuwen C (2015) Dynamic effective connectivity in cortically embedded systems of recurrently coupled synfire chains. J Comput Neurosci 40(1),1-26. doi:10.1007/s10827-015-0581-5

Schücker J, **Diesmann M**, Helias M (2015) Modulated escape from a metastable state driven by colored noise. Phys Rev E, E 92, 052119. doi:10.1103/PhysRevE.92.052119

Hahne J,Helias M, Kunkel S, Igarashi J, Bolten M, Frommer A, **Diesmann M** (2015) A unified framework for spiking and gap-junction interactions in distributed neuronal network simulations: Front Neuroinf 9:22. doi:10.3389/fninf.2015.00022

Van Albada S, Helias M, **Diesmann M** (2015) Scalability of Asynchronous Networks Is Limited by One-to-One Mapping between Effective Connectivity and Correlations: PLoS Comput Biol 11(9), e1004490. doi: 10.1371/journal.pcbi.1004490

Muller E, Bednar JA, **Diesmann M**, Gewaltig MO, Hines M, Davison AP (2015) Python in neuroscience. Front Neuroinform 9:11. doi:10.3389/fninf.2015.00011

2014

Kunkel S, Schmidt M, Eppler JM, Plesser HE, Masumoto G, Igarashi J, Ishii S, Fukai

T, Morrison A, **Diesmann M**, Helias M (2014) Spiking network simulation code for petascale computers. Front Neuroinform 8:78. doi:10.3389/fninf.2014.00078

Potjans TC, **Diesmann M** (2014) The Cell-Type Specific Cortical Microcircuit: Relating Structure and Activity in a Full-Scale Spiking Network Model. Cereb Cortex 24(3):785-806. doi:10.1093/cercor/bhs358

Helias M, Tetzlaff T, **Diesmann M** (2014) The Correlation Structure of Local Neuronal Networks Intrinsically Results from Recurrent Dynamics. PLoS Comput Biol 10(1):e1003428. doi:10.1371/journal.pcbi.1003428

2013

Wagatsuma N, Potjans TC, Diesmann M, Sakai K, Fukai T (2013) Spatial and feature-based attention in a layered cortical microcircuit model. PLoS One 8(12):e80788, doi: 10.1371/journal.pone.0080788

Nowke C, Hentschel B, Kuhlen T, Schmidt M, van Albada SJ, Eppler JM, Bakker R, **Diesmann M** (2013) VisNEST – interactive analysis of neural activity data IEEE BioVis 65-72

Kriener B, Helias M, Rotter S, **Diesmann M**, Einevoll GT (2013) How pattern formation in ring networks of excitatory and inhibitory spiking neurons depends on the input current regime. Front Comput Neurosci 7:187. doi: 10.3389/fncom.2013.00187

Grytskyy D, Tetzlaff T, **Diesmann M**, Helias M (2013) A unified view on weakly correlated recurrent networks. Front Comp Neurosi 18(7):131. doi:10.3389/fncom.2013.00131

Abeles M, **Diesmann M**, Flash T, Geisel T, Hermann M, Teicher M (2013) Compositionality in Neural Control: An Interdisciplinary Study of Scribbling Movements in Primates. Front Comp Neurosi 12(7):103. doi:10.3389/fncom.2013.00103

Vlachos A, Helias M, Becker D, **Diesmann M**, Deller T (2013) NMDA-receptor inhibition increases spine stability of denervated mouse dentate granule cells and accelerates spine density recovery following entorhinal denervation in vitro. Neurobiol Dis 59:267-–276. doi:10.1016/j.nbd.2013.07.018

Helias M, Tetzlaff T, **Diesmann M** (2013) Echoes in correlated neural systems. New J. Phys. 15:023002. doi:10.1088/1367-2630/15/2/023002

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

Trengove C, van Leeuwen C, **Diesmann M** (2013) High-capacity embedding of synfire chains in a cortical network model. J Comput Neurosci 34(2):185-209. doi:10.1007/s10827-012-0413-9

2012

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

Bakker R, Wachtler T, **Diesmann M** (2012) CoCoMac 2.0 and the future of tract-tracing databases. Front Neuroinform. 6:30. doi: 10.3389/fninf.2012.00030

Pfeil T, Potjans TC, Schrader S, Potjans W, Schemmel J, **Diesmann M**, Meier K (2012) Is a 4-bit synaptic weight resolution enough? – constraints on enabling spike-timing dependent plasticity in neuromorphic hardware. Frontiers in Neuromorphic Engineering 6:90. doi:10.3389/fnins.2012.00090

Helias M, Kunkel S, Masumoto G, Igarashi J, Eppler JM, Ishii S, Fukai T, Morrison A,

Diesmann M (2012) Supercomputers ready for use as discovery machines for neuroscience. Front Neuroinform 6:26. doi:10.3389/fninf.2012.00026

Deger M, Helias M, Rotter S, **Diesmann M** (2012) Spike-Timing Dependence of Structural Plasticity Explains Cooperative Synapse Formation in the Neocortex. PLoS Comput Biol 8(9):e1002689. doi:10.1371/journal.pcbi.1002689

Tetzlaff T, Helias M, Einevoll GT, **Diesmann M** (2012) Decorrelation of Neural-Network Activity by Inhibitory Feedback. PLoS Comput Biol 8(8):e1002596. doi:10.1371/journal.pcbi.1002596

Kunkel S, Potjans TC, Eppler JM, Plesser HE, Morrison A, **Diesmann M** (2012) Meeting the memory challenges of brain-scale network simulation. Front Neuroinform 5:35. doi:10.3389/fninf.2011.00035

2011

von Kapri A, Rick T, Potjans TC, **Diesmann M**, Kuhlen T (2011) Towards the visualization of spiking neurons in virtual reality. Stud Health Technol Inform 163:685-687. doi:10.3233/978-1-60750-706-2-685

Ishii S, **Diesmann M**, Doya K (2011) Multi-scale, multi-modal neural modeling and simulation. Neural Networks 24(9):917. doi:10.1016/j.neunet.2011.07.004

Kunkel S, **Diesmann M**, Morrison A (2011) Limits to the development of feed-forward structures in large recurrent neuronal networks: Front Comput Neurosci 4:160. doi:10.3389/fncom.2010.00160

Wagatsuma N, Potjans T C, **Diesmann M**, Fukai T (2011) Layer-dependent attentional processing by top-down signals in a visual cortical microcircuit model Front Comput Neurosci 5:31. doi:10.3389/fncom.2011.00031

Hanuschkin A, Herrmann J M, Morrison A, **Diesmann M** (2011) Compositionality of arm movements can be realized by propagating synchrony. J Comput. Neurosci. 30(3):675-697. doi:10.1007/s10827-010-0285-9

Brüderle D, Petrovici MA, Vogginger B, Ehrlich M, Pfeil, T, Millner S, Grübl A, Wendt K, Müller E, Schwartz M-O, de Oliveira DH, Jeltsch S, Fieres J, Schilling M, Müller P, Breitwieser O, Petkov V, Muller L, Davison A, Krishnamurthy P, Kremkow J, Lundqvist M, Muller E, Partzsch J, Scholze S, Zühl L, Mayr C, Destexhe A, **Diesmann M**, Potjans T C, Lansner A, Schüffny R, Schemmel J, Meier K (2011) A comprehensive workflow for general-purpose neural modeling with highly configurable neuromorphic hardware systems. Biol Cybern 104(4-5):263-296. doi:10.1007/s00422-011-0435-9

Potjans W, **Diesmann M**, Morrison A (2011) An imperfect dopaminergic error signal can drive temporal-difference learning. PLoS Comput Biol 7(5): e1001133. doi: 10.1371/journal.pcbi.1001133

Denker M, Roux S, Lindén H, **Diesmann M**, Riehle A, Grün S (2011) The Local Field Potential Reflects Surplus Spike Synchrony. Cereb Cortex 21(12):2681-2695. doi:10.1093/cercor/bhr040

Hanuschkin A, **Diesmann M**, Morrison A (2011) A reafferent and feed-forward model of song syntax generation in the Bengalese finch. J Comput Neurosci. 31(3):509-32. doi:10.1007/s10827-011-0318-z

Lindén 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

Helias M, Deger M, Rotter S, **Diesmann M** (2011) Finite post synaptic potentials cause a fast neuronal response. Front Neurosci 5:19. doi:10.3389/fnins.2011.00019

2010

Denker M, Riehle A, **Diesmann M**, Grün S (2010) Estimating the contribution of assembly activity to cortical dynamics from spike and population measures: J Comput Neurosci 29(3):599-613. doi: 10.1007/s10827-010-0241-8

Kilavik BE, Confais J, Ponce-Alvarez A, **Diesmann M**, Riehle A (2010) Evoked potentials in motor cortical local field potentials reflect task timing and behavioral performance. J Neurophysiol 104(5):2338-2351. doi: jn.00250.2010v1

Schrader S, **Diesmann M**, Morrison A (2010) A compositionality machine realized by a hierarchic architecture of synfire chains. Front Comput Neurosci 4:154. doi:10.3389/fncom.2010.00154

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

Potjans W, Morrison A, **Diesmann M** (2010) Enabling functional neural circuit simulations with distributed computing of neuromodulated plasticity. Front Comput Neurosci 4:141. doi:10.3389/fncom.2010.00141

Helias M, Deger M, Rotter S, **Diesmann M** (2010) Instantaneous Non-Linear Processing by Pulse-Coupled Threshold Units. PLoS Comput Biol 6(9):e1000929. doi:10.1371/journal.pcbi.1000929

Hanuschkin A, Kunkel S, Helias M, Morrison A, **Diesmann M** (2010) A general and efficient method for incorporating precise spike times in globally time-driven simulations. Front Neuroinform 4:113. doi:10.3389/fninf.2010.00113

Helias M, Deger M, **Diesmann M**, Rotter S (2010) Equilibrium and response properties of the integrate-and-fire neuron in discrete time. Front Comput Neurosci 3, 29. doi:10.3389/neuro.10.029.2009

Djurfeldt M, Hjorth J, Eppler JM, Dudani N, Helias M, Potjans TC, Bhalla US, **Diesmann M**, Kotaleski JH, Ekeberg O (2010) Run-Time Interoperability Between Neuronal Network Simulators Based on the MUSIC Framework Neuroinformatics 8(1):43-60. doi:10.1007/s12021-010-9064-z

2009

Lindén H, Pettersen KH, Tetzlaff T, Potjans T, Denker M, **Diesmann M**, Grün S, Einevoll GT (2009) Estimating the spatial range of local field potentials in a cortical population model. PLoS Comput Biol 5(8):e1000456. doi:10.1186/1471-2202-10-S1-P224

Eppler JM, Helias M, Muller E, **Diesmann M**, Gewaltig M-O (2009) Pynest: a convenient interface to the nest simulator. Front Neuroinform 2:12. doi:10.3389/neuro.11.012.2008

Potjans W, Morrison A, **Diesmann M** (2009) A spiking neural network model of an actor-critic learning agent. Neural Comput 21:353-359. doi:10.1162/neco.2008.08-07-593

Plesser H E, **Diesmann M** (2009) Simplicity and efficiency of integrate-and-fire neuron models. Neural Comput 21:353-359. doi:10.1162/neco.2008.03-08-731

2008

Grün S, Abeles M, **Diesmann M**. (2008) Impact of higher-order correlations on coincidence distributions of massively parallel data. Lecture Notes in Computer Science, 'Dynamic Brain - from Neural Spikes to Behaviors' 5286:96-114. doi:10.1007/978-3-540-88853-6

Helias M, Rotter S, Gewaltig M-O, **Diesmann M** (2008) Structural plasticity controlled by calcium based correlation detection. Front Comput Neurosci 2, 7. doi:10.3389/neuro.10.007.2008

Schrader S, Grün S, **Diesmann M**, Gerstein G (2008) Detecting synfire chain activity using massively parallel spike train recording. J Neurophysiol 100:2165-2176. doi:10.1152/jn.01245.2007

Pazienti A, Maldonado P, **Diesmann M**, Grün S (2008) Effectiveness of systematic spike dithering depends on the precision of cortical synchronization. Brain Res 1225:39-46. doi:0.1016/j.brainres.2008.04.073

Morrison A, **Diesmann M**, Gerstner W (2008) Phenomenological Models of Synaptic Plasticity based on Spike Timing. Biol Cybern 98(6):459-478. doi:10.1007/s00422-008-0233-1

Tetzlaff T, Rotter S, Stark E, Abeles M, Aertsen A, **Diesmann M** (2008) Dependence of neuronal correlations on filter characteristics and marginal spike-train statistics. Neural Comput 20: 2133-2184. doi: 10.1162/neco.2008.05-07-525.

Kriener B, Tetzlaff T, Aertsen A, **Diesmann M**, Rotter S (2008) Correlations and population dynamics in cortical networks. Neural Comput 20: 2185-2226. doi:10.1162/neco.2008.02-07-474

Goedeke S, **Diesmann M** (2008) The mechanism of synchronization in feed-forward neuronal networks. New J Phys 10:015007. doi:10.1088/1367-2630/10/1/015007

2007

Morrison A, Aertsen A, **Diesmann M** (2007) Spike-timing-dependent plasticity in balanced random networks Neural Comput 19:1437-1467. doi:10.1162/neco.2007.19.6.1437in 2008 among top downloads from NECO

Morrison A, Straube S, Plesser H E, **Diesmann M** (2007) Exact subthreshold integration with continuous spike times in discrete time neural network simulations Neural Comput 19: 47-79. doi:10.1162/neco.2007.19.1.47

Pazienti A, **Diesmann M**, Grün S (2007) Bounds of the ability to destroy precise coincidences by spike dithering. Lecture Notes in Computer Science 4729: 428-437. doi:10.1007/978-3-540-75555-5_41

Plesser H E, Eppler J M, Morrison A, **Diesmann M**, Gewaltig M-O (2007) Efficient Parallel Simulation of Large-Scale Neuronal Networks on Clusters of Multiprocessor Computers Euro-Par 2007, Proceedings of the 13th International Euro-Par Conference, LCNS Springer 4641: 672-681. doi:10.1007/978-3-540-74466-5_71

Brette R et al. incl. MD (2007) Simulation of networks of spiking neurons: A review of tools and strategies J Comput Neurosci 23(3): 349-398. doi:10.1007/s10827-007-0038-6

Gewaltig M-O, **Diesmann M** (2007) NEST Scholarpedia 2(4):1430

Up to 2006

Backofen R, Borrmann HG, Deck W, Dedner A, De Raedt L, Desch K, **Diesmann M**, Geier M, Greiner A, Hess WR, Honerkamp J, Jankowski S, Krossing I, Liehr AW, Karwath A, Klöfkorn R, Pesché R, Potjans T, Röttger MC, Schmidt Thieme L, Schneider G, Voß B, Wiebelt B, Wienemann P, Winterer VH (2006) A Bottom-up approach to Grid-Computing at a University: the Black-Forest-Grid Initiative. PIK - Praxis der Informationsverarbeitung 29:81-87. doi:10.1515/PIKO.2006.81

Guerrero-Rivera R, Morrison A, **Diesmann M**, Pearce, T C (2006) Programmable Logic Construction Kits for Hyper Real-time Neuronal Modeling. Neural Comput

18:2651-2679. doi:10.1162/neco.2006.18.11.2651

Morrison A, Mehring C, Geisel T, Aertsen A, **Diesmann M** (2005) Advancing the boundaries of high connectivity network simulation with distributed computing. Neural Comput 17(8):1776-1801. doi:10.1162/0899766054026648

Tetzlaff T, Morrison A, Geisel T, **Diesmann M** (2004) Consequences of Realistic Network Size on the Stability of Embedded Synfire Chains. Neurocomputing 58-60:117-121. doi:10.1016/j.neucom.2004.01.031

Denker M, Timme M, **Diesmann M**, Wolf F, Geisel T (2004) Breaking synchrony by heterogeneity in complex networks. Phys Rev Lett 92(7):074103. doi:10.1103/PhysRevLett.92.074103

Grün S, Riehle A, **Diesmann M** (2003) Effect of cross-trial non-stationarity on joint-spike events. Biol Cybern 88(5):335-351. doi:10.1007/s00422-002-0386-2

Grün S, Riehle A, Aertsen A, **Diesmann M** (2003) Temporal Scales of Cortical Interactions. Nova Acta Leopoldina 332:189-206

Pipa G, **Diesmann M**, Grün S (2003) Significance of Joint-Spike Events Based on Trial-Shuffling by Efficient Combinatorial. Methods Complexity 8(4):79-86. doi:10.1002/cplx.10085

Mehring C, Hehl U, Kubo M, **Diesmann M**, Aertsen A (2003) Activity Dynamics and Propagation of Synchronous Spiking in Locally Connected Random Networks. Biol Cybern 88(5):395-408. doi:10.1007/s00422-002-0384-4

Tetzlaff T, Buschermoehle M, Geisel T, **Diesmann M** (2003) The spread of rate and correlation in stationary cortical networks. Neurocomputing 52-54:949-954. doi:10.1016/S0925-2312(02)00854-8

Tetzlaff T, Geisel T, **Diesmann M** (2002) The Ground State of Cortical Feed-Forward Networks. Neurocomputing 44-46:673-678. doi:10.1016/S0925-2312(02)00456-3

Egert U, Knott Th, Schwarz C, Nawrot M, Brandt A, Rotter S, **Diesmann M** (2002) MEA-Tools: an open source toolbox for the analysis of multi-electrode data with MATLAB. J Neurosci Meth 117:33-42

Grün S, **Diesmann M**, Aertsen A (2002) ‘Unitary Events’ in Multiple Single Neuron Spiking Activity. II. Non-Stationary Data. Neural Comput 14(1):81-119. doi:10.1162/089976602753284464

Grün S, **Diesmann M**, Aertsen A (2002) Unitary Events' in Multiple Single Neuron Spiking Activity. I. Detection and Significance. Neural Comput 14(1):43-80. doi:10.1162/089976602753284455

Gewaltig M-O, **Diesmann M**, Aertsen A (2001) Propagation of cortical synfire activity: survival probability in single trials and stability in the mean. Neural Networks 14:657-673. doi:10.1016/S0893-6080(01)00070-3

Gewaltig M-O, **Diesmann M**, Aertsen A (2001) Cortical Synfire-Activity: Configuration Space and Survival Probability. Neurocomputing 38-40:621-626. doi:10.1016/S0925-2312(01)00454-4

Diesmann M, Gewaltig M-O, Rotter S, Aertsen A (2001) State Space Analysis of Synchronous Spiking in Cortical Neural Networks. Neurocomputing 38-40:565-571. doi:10.1016/S0925-2312(01)00409-X

Riehle A, Grammont F, **Diesmann M**, Grün S (2000) Dynamical Changes and Temporal Precision of Synchronized Spiking Activity in Monkey Motor Cortex During Movement Preparation. J Physiology-Paris 94:569-582. doi:10.1016/S0928-4257(00)01100-1

Rotter, S, **Diesmann M** (1999) Exact Digital Simulation of Time-Invariant Linear Systems with Applications to Neuronal Modeling. Biol Cybern 81:381-402. doi:10.1007/s004220050570

Grün S, **Diesmann M**, Grammont F, Riehle A, Aertsen A (1999) Detecting unitary events without discretization of time. J Neurosci Meth 94:67-79. doi:10.1016/S0165-0270(99)00126-0

Diesmann M, Gewaltig M-O, Aertsen A (1999) Stable Propagation of Synchronous Spiking in Cortical Neural Networks. Nature 402:529-533. doi:10.1038/990101

Riehle A, Grün S, **Diesmann M**, Aertsen A (1997) Spike Synchronization and Rate Modulation Differentially Involved in Motor Cortical Function. Science 278:1950-1953. doi: 10.1126/science.278.5345.1950

Aertsen A, **Diesmann M**, Gewaltig M-O (1996) Propagation of synchronous spiking activity in feedforward neural networks J Physiology-Paris 90:243-247. doi:10.1016/S0928-4257(97)81432-5

Book Chapters

Schmidt M, **Diesmann M**, van Albada SJ (2018) Necessity and feasibility of large-scale neuronal network simulations. In: Lecture Notes of the 49th IFF Spring School “Physics of Life" https://juser.fz-juelich.de/record/844769

Senk J, Yegenoglu A, Amblet O, Brukau Y, Davison A, Lester DR, Lührs A, Quaglio P, Rostami V, Rowley A, Schuller B, Stokes AB, 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 M-A, Iliev H, Lintermann A, Peyser A eds. High-Performance Scientific Computing. Cham: Springer International Publishing, 243–256. doi: 10.1007/978-3-319-53862-4_21.

Hahne J, Helias M, Kunkel S, Igarashi J, Kitayama J, Wylie B, Bolten M, Frommer A, **Diesmann M** (2016) Including Gap Junctions into Distributed Neuronal Network Simulations. In: Amunts K, Grandinetti L, Lippert T, Petkov N. (eds) Brain Inspired Computing Brain Comp 2015. Lecture Notes in Computer Science, Vol 10087, pp 43-57. doi:10.1007/978-3-319-50862-7_4

van Albada SJ, Kunkel S, Morrison A, Diesmann M (2014) Integrating Brain Structure and dynamics on supercomputers in: Brain Inspired Computing eds. Grandinetti L, Lippert T, Petkov N. In: Grandinetti L, Lippert T, Petkov N eds. Brain-Inspired Computing LNCS 8603:22-32. doi:10.1007/978-3-319-12084-3.3.

Potjans T, **Diesmann M** (2013) Multi-population Network Models of the Cortical Microcircuit. In: Y. Yamaguchi ed. Advances in Cognitive Neuroscience (III) p 91-96. Springer. doi:10.1007/987-94-007-4792-0_13

Trengove, C, van Leeuwen C; **Diesmann M** (2013) Complex Network Topology and Dynamics in Networks Supporting Precisely-Timed Activity Patterns. In: Y. Yamaguchi ed. Advances in Cognitive Neuroscience (III) p 317-322. Springer. doi.org/10.1007/978-94-007-4792-0_43

Kunkel S, Helias M, Potjans TC, Eppler JM, Plesser HE, **Diesmann M**, Morrison A (2012) Memory Consumption of Neuronal Network Simulators at the Brain Scale NIC Symposium 2012, Editors: Klaus Binder, Gernot Münster, Manfred Kremer. Proceedings, Forschungszentrum Jülich NIC Series Vol. 45, page 81 ISBN 978-3-89336-758-0. http://juser.fz-juelich.de/record/21739

Lansner A, **Diesmann M** (2012) Virtues, pitfalls, and methodology of neuronal network modeling and simulations on supercomputers. in Nicolas Le Novére Computational Systems Biology, Chapt. 10, Springer, ISBN 978-94-007-3857-7. doi: 10.1007/978-94-007-3858-4_10

Grün, S **Diesmann, M**, Aertsen, A (2010) Unitary event analysis. In: Sonja Grün, Stefan Rotter eds. Analysis of Parallel Spike Trains Chapter 10, 191-220 Springer. doi. 10.1007/978-1-4419-5675-0_10

Tetzlaff T, **Diesmann M** (2010) Dependence of Spike-Count Correlations on Spike-

Train Statistics and Observation Time Scale. In: Sonja Grün, Stefan Rotter eds. Analysis of Parallel Spike Trains Chapter 6 103-127. Springer. doi. 10.1007/978-1-4419-5675-0_6

Denker M, Wiebelt B, Fliegner D, **Diesmann M**, Morrison, A (2010) Practically trivial parallel data processing in a neuroscience laboratory. In: Sonja Grün, Stefan Rotter eds. Analysis of Parallel Spike Trains Chapter 20 413-436. Springer. doi.org/10.1007/978-1-4419-5675-0_20

Morrison A, **Diesmann M** (2007) Maintaining Causality in Discrete Time Neuronal Network Simulations In: P. Beim Graben, C. Zhou, M. Thiel, and J. Kurths eds. Lectures in supercomputational neuroscience: dynamics in complex brain networks Chapter IV.10 p 267-278. Springer preprint. doi.org/10.1007/978-3-540-73159-7_10

Grün S, Abeles M, **Diesmann M** (2008) Impact of higher-order correlations on coincidence distributions of massively parallel data. In: Marinaro M, Scarpetta S, Yamaguchi Y eds. Dynamic Brain - from Neural Spikes to Behaviors. Berlin, Heidelberg: Springer Berlin Heidelberg, 96–114. doi: 10.1007/978-3-540-88853-6_8

Pazienti A, **Diesmann M**, Grün S (2007) Bounds of the ability to destroy precise coincidences by spike dithering. In: Mele F, Ramella G, Santillo S, Ventriglia F eds. Advances in Brain, Vision, and Artificial Intelligence. Berlin, Heidelberg: Springer Berlin Heidelberg, 428–437. doi: 10.1007/978-3-540-75555-5_41.

Plesser HE, Eppler JM, Morrison A, **Diesmann M**, Gewaltig M-O (2007) Efficient parallel simulation of large-scale neuronal networks on clusters of multiprocessor computers. In: Kermarrec A-M, Bougé L, Priol T eds. Euro-Par 2007 Parallel Processing. Berlin, Heidelberg: Springer Berlin Heidelberg, 672–681. doi: 10.1007/978-3-540-74466-5_71.

Eppler JM, Plesser HE, Morrison A, **Diesmann M**, Gewaltig MO (2007) Multithreaded and distributed simulation of large biological neuronal networks. In: Cappello, F, Herault, T, Dongarra J eds. Recent Advances in Parallel Virtual Machine and Message Passing Interface 4757. Springer. doi.org/10.1007/978-3-540-75416-9_55

Gewaltig MO, **Diesmann M**, Aertsen A (1995) Propagation of Synfire Activity in Cortical Networks: a Statistical Approach. In: Kappen, B, Gielen, S eds. Neural Networks: Artificial Intelligence and Industrial Applications 37-40. Springer. doi.org/10.1007/978-1-4471-3087-1_6

Technical Reports

Diesmann M. and Gewaltig M.-O. and Aertsen A (1995) SYNOD: an Environment for Neural Systems Simulations. Language Interface and Tutorial. In: Weizmann Institute of Science, technical report GC-AA-/95-3