

## CURRICULUM VITAE

### Marcus Kaiser, Ph.D. FRSB

Professor of Neuroinformatics

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### Education/Qualifications

8/2005 Jacobs University Bremen, Germany  
PhD in Neuroscience, special distinction  
9/2002 Ruhr-University Bochum, Germany  
“Diplom” (=BSc+MSc) Biology, first-class honours degree  
Since 10/1998 Distance University Hagen, Germany  
part time studies of Computer Science (Master’s level)

### Professional History

2015 – Professor (Personal Chair) in Neuroinformatics,  
Newcastle University, UK  
2010 – 2015 Associate Professor (Reader) in Neuroinformatics,  
Newcastle University, UK  
2009 – 2013 Visiting Associate Professor (part-time)  
Seoul National University, South Korea  
Department of Brain and Cognitive Sciences  
2005 – 2010 Assistant Professor (RCUK Academic Fellow)  
for Complex Neural Systems, Newcastle University, UK

### Prizes, Awards and other Honours

2017 Elected member of the UK Computing Research Committee (UKCRC)  
2016 Elected Fellow of the Royal Society of Biology (FRSB)  
2003 – 2005 Fellow of the German National Merit Foundation (PhD scholarship)  
2000 – 2002 Fritz-ter-Meer Foundation (Bayer PLC) (MSc studentship)

### Professional Contributions

#### Memberships

UKCRC - UK Computing Research Committee (<http://www.ukcrc.org.uk/>) panel of leading  
computing researchers from academia and industry (member since 2017)  
RSB - Royal Society of Biology (Fellow since 2016)  
IEEE - Institute of Electrical and Electronics Engineers (Senior Member since 2013)  
BNA - British Neuroscience Association  
ISMAR - International Society of Magnetic Resonance  
ISMARM - International Society for Magnetic Resonance in Medicine (British Chapter)

UK Mathematical Neuroscience Network  
UK INCF Special Interest Group in Image-based Neuroinformatics (Leader)  
EPSRC Peer Review College  
MRC ‘Neurosciences and Mental Health Board’ member for Computational Neuroscience

### Editorial appointments

- Member of the editorial board of *Royal Society Open Science* (since 12/2016)
- Member of the editorial board of *Network Neuroscience*, MIT Press (since 4/2016)
- Member of the editorial board of *Applied Network Science*, Springer (since 7/2015)
- Member of the editorial board of *ACM Computing Reviews* (since 10/2012)
- Member of the editorial board of *Frontiers in Neuroinformatics* (since 8/2007)
- Member of the editorial board of *PLOS ONE* (since 9/2008)
- Editor of special issue of *Frontiers in Neuroinformatics* on 'Hierarchy and dynamics in neural networks'.

### Organizational management

- Chair of Neuroinformatics UK <http://www.neuroinformatics.org.uk/> (since 2017)
- Co-Chair of the SIG in Neuroinformatics of the British Neuroscience Association (since 2017)
- Leader of the UK INCF Special Interest Group in Image-based Neuroinformatics (since 2011)
- Organization of the first UK INCF workshop on Image-based Neuroinformatics, Newcastle University, January 2012

### Newcastle University

- Initiator/Co-Director of Wellcome Trust Systems Neuroscience PhD programme (since 2007)
- Leader of Neuroinformatics (<http://neuroinformatics.ncl.ac.uk/> )
- Leader of Neuroinformatics strand within our Bioinformatics master programme (since 2010)
- Chair of the IT Committee within the School of Computing Science (since 2015)

### Reviewer for funding bodies

#### *UK*

Academy of Medical Sciences  
Alzheimer Research UK  
Biol. & Biotech. Res. Council (BBSRC)\*  
Eng. & Phys. Sci. Res. Council (EPSRC)\*  
Medical Research Council (MRC)\*  
Wellcome Trust\*  
Leverhulme Trust  
Hadwen Trust  
Royal Society of Edinburgh

#### *International*

US National Science Foundation (NSF)  
French Research Foundation (ANR)  
German Ministry for Research (BMBF)  
Austrian Science Foundation (FWF)  
Swiss National Science Foundation (SNF)  
Canada Foundation for Innovation (CFI)  
Banff International Research Station (BIRS)  
Dutch Science Foundation (NWO)  
US-Israel Binational Science Foundation  
Hong-Kong Baptist University  
\*: frequently

### Reviewer for journals

ACM Computing Reviews  
American Journal of Psychiatry  
Biological Psychiatry  
BMC Neuroscience  
Brain  
Brain Connectivity  
Brain Research Bulletin  
Brain Structure and Function\*  
British Journal of Neurosurgery  
Cerebral Cortex\*  
Chaos  
Chinese Physics Letters

Clinical Neurophysiology  
Current Biology  
e-Life  
European Journal of Neuroscience  
European Physical Journal B  
Epilepsia  
Frontiers in Neuroinformatics  
Human Brain Mapping\*  
Journal of Alzheimer's Disease  
Journal of Complex Networks  
Journal of Neuroscience  
Journal of the Royal Society Interface

Journal of Comparative Physiology A	Physica A
Nature Communications	Physical Review E*
Nature Physics	Physical Review Letters*
Nature Reviews Neuroscience	PLOS Computational Biology*
Neural Networks	PLOS ONE*
NeuroComputing	Proc. Roy. Soc. Lond. Ser. B
Neuroimage*	Proc. Roy. Soc. Lond. Ser. A
Neuroimage Clinical*	Scholarpedia
Neuroinformatics	Scientific Reports
Neurology	The Anatomical Record
Neuron	Translational Psychiatry
New Journal of Physics	Trends in Cognitive Sciences
PeerJ	*: frequently
Phil. Trans. Roy. Soc. B*	

#### Reviewer for publishers (journal and book proposals)

Cambridge University Press	Oxford University Press
MIT Press	Wiley-VCH Press

#### External member of faculty selection or faculty promotion committees

Universities in EU and Africa

### **GRANTS AWARDED**

#### Current Grants

2016	EPSRC Programme Grant (Co-I)	£4,350,000
2016	Alzheimer's Research UK Pilot Grant (Co-I)	£45,000
2015	Newcastle Healthcare Charity (Co-I)	£35,000
2014	EPSRC/Wellcome Trust: Innovative Engineering for Health (Co-I)	£10,000,000
2012	BBSRC PhD studentship (PI)	£90,000
2007	Wellcome Trust - Four-year PhD programme (Co-PI)	£4,000,000

#### Previous Grants

2014	School of Computing Science – Research Innovation Fund (PI)	£9,500
2013	EPSRC Standard Grant (PI)	£465,000
2013	NIHR: Disruption of brain connectivity in Lewy body dementias (Co-I)	£80,000
2011	EPSRC Impact Award (PI)	£26,495
2011	Amazon Cloud Computing Research Grant (PI)	\$7,500
2010	Santander Visiting Fellowship (PI)	£3,000
2009	EPSRC First Grant (PI)	£380,000
2009	Newcastle University, Computing Science Strategic Grant (PI)	£10,000
2009	KRF WCU-Visiting Professorship Seoul National University	£235,000
2009	BBSRC PhD studentship (PI)	£80,000
2007	Royal Society - Conference Travel Grant	£1,000
2007	International Center of Transdisciplinary Studies (ICTS), Jacobs University Bremen - Visiting Fellowship	£750
2007	Royal Society - Research Grant (PI)	£15,000
2006	EPSRC - CARMEN e-science (Co-I, total sum of grant)	£4,500,000
2006	EPSRC - CASE PhD studentship (PI)	£80,000
2005	DFG (German Research Council) - Conference Travel Grant	£750
2004	DAAD - academic exchange - Germany-USA (co-applicant)	£5,000

## ACADEMIC SUPERVISION

### Research fellows supervised

2008 – 2012	Jennifer Simonotto	2013 – 2015	Peter Taylor*
2009	Christoph Feenders	2013 – 2016	Yujiang Wang*
2010	Jinseop Kim*	2012 –	Luis Peraza Rodriguez
2010 – 2013	Cheol E. Han*	2015 – 2016	Sol Lim
2013 – 2016	Roman Bauer*		

\*: now faculty members

### PhD students supervised

2009 – 2013	Henrik Kjeldsen	Wellcome Trust programme
2009 – 2014	Richard Tomsett	BBSRC programme
2010 – 2015	Sol Lim	Korean Research Foundation
2013 – 2016	Chris Papasavvas	Wellcome Trust programme
2014 –	Chris Thornton	BBSRC programme
2014 –	Frances Hutchings	Computing Science Studentship
2014 –	Michael Mackay	Staff PhD student
2015 –	Chris Hayward	SAGe Faculty DTA studentship
2017 –	Nishant Sinha	Computing Science / IoN studentship

### PhDs examined (external)

2017	Siti Makhtar	York University, United Kingdom
2016	Ye Yao	Warwick University, United Kingdom
2015	Peter Eipert	Rostock University, Germany
2015	Sarvenaz Choobdar	University of Porto, Portugal
2012	David Samu	Sussex University, United Kingdom
2011	Pedro Ribeiro	University of Porto, Portugal
2007	Lucia Zemanova	Potsdam University, Germany

## TEACHING ACTIVITY

### Higher education teaching qualification

2009	Certificate in Advanced Studies in Academic Practice, Newcastle University recognized as Higher Education Academy (HEA) Associate Fellow
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### Undergraduate and graduate teaching

2002 – 2005 Jacobs University Bremen, Germany

- 2005 – Newcastle University
- Computing Environments for Bioinformatics module (Perl, SQL)
  - Neuroinformatics and Computational Neuroscience module
  - Complex Systems module (network analysis & dynamical systems)
  - Lecture on Connectomics, MSc Neuroscience
  - Lecture on Neuroinformatics, IoN Research Summer School

- 2010 – 2012 Seoul National University
- Neuroinformatics and Computational Neuroscience module
  - Lecture on Neuroinformatics and Connectomics, PhD programme
- 2011 Tutorial on Connectome Analysis at Computational Neuroscience Society Annual Meeting, Stockholm, Sweden

#### Public understanding of science

- 2017 Public Lecture Computing at School North East Meeting, Newcastle, UK
- 2014 YouTube Channel: <https://tinyurl.com/YouTubeConnectome>
- 2013 Comic British Science Festival, Newcastle, UK
- 2006 Interview BBC Radio, UK
- 2005 Public lecture Benjamin der Wissenschaft, Bremen, Germany

## **PUBLICATIONS**

Currently 2,500+ citations in ISI (<http://www.researcherid.com/rid/A-7166-2008>) and 4,850+ in Google Scholar ([http://scholar.google.com/citations?user=Ha\\_ZNIKAAAAJ](http://scholar.google.com/citations?user=Ha_ZNIKAAAAJ))  
 ORCID <http://orcid.org/0000-0002-4654-3110>

### **Books**

Bota M, Crook S, Kaiser M (eds.) Producing and Analyzing Macro-Connectomes: Current State and Challenges. Frontiers Research Topic, 2016.  
Kaiser M, Hilgetag CC, Kötter R (eds.) Hierarchy and dynamics in neural networks. Frontiers Research Topic, 2012.

### **PhD thesis**

2005 Neural and Biochemical Networks: Organization, Development, and Robustness

### **Peer-reviewed Journal Publications**

1. Schumacher J, Peraza L, Firbank M, Thomas A, Kaiser M, Gallagher P, O'Brien J, Blamire A, Taylor JP. Functional connectivity in dementia with Lewy bodies: A within- and between-network analysis. *Human Brain Mapping*, 10.1002/hbm.23901, 2017.
2. Kaiser M. Mechanisms of Connectome Development. *Trends in Cognitive Sciences*, 21:703-717, 2017.
3. Wang Y, Trevelyan AJ, Taylor PN, Valentin A, Alarcon G, Kaiser M. Mechanisms underlying different onset patterns of focal seizures. *PLOS Computational Biology*, 13(5): e1005475, 2017.
4. Sinha N, Dauwels J, Kaiser M, Cash SS, Brandon Westover M, Wang Y, Taylor PN. Reply: Computer models to inform epilepsy surgery strategies: prediction of postoperative outcome. *Brain* doi:10.1093/brain/awx068, 2017.
5. Bauer R, Kaiser M. Nonlinear growth: an origin of hub organization in complex networks. *Royal Society Open Science*, 4:160691, 2017.
6. Peraza L, Nesbitt D, Lawson R, Duncan G, Yarnall A, Khoo T, Kaiser M, Firbank M, O'Brien J, Barker R, Brooks D, Burn D, Taylor JP. Intra- and inter-network functional alterations in

- Parkinson's disease with mild cognitive impairment. *Human Brain Mapping*, 38(3):1702-1715, 2017.
7. Taylor PN, Wang Y, Kaiser M. Within brain area tractography suggests local modularity using high resolution connectomics. *Scientific Reports*, 7:39859, 2017.
  8. Sinha N, Dauwels J, Wang Y, Kaiser M, Cash SS, Westover MB, Taylor PN. Predicting neurosurgical outcomes in focal epilepsy patients using computational modelling. *Brain*, 140(2):319-332, 2017.
  9. Wang Y, Necus J, Kaiser M, Mota B. Universality in human cortical folding in health and disease. *Proc. Natl. Acad. Sci. USA*, 113(45):12820–12825, 2016.
  10. Ainsworth M, Lee S, Kaiser M, Simonotto J, Cunningham MO, Kopell N, Whittington MA. GABA<sub>B</sub> receptor-mediated, layer-specific synaptic plasticity reorganises gamma frequency neocortical response to stimulation. *Proc. Natl. Acad. Sci. USA* 113:E2721–E2729, 2016.
  11. Thanarajah SE, Han CE, Rotarska-Jagiela A, Singer W, Deichmann R, Maurer K, Kaiser M, Uhlhaas P. Abnormal Connectional Fingerprints in Schizophrenia: A Novel Network Analysis of Diffusion Tensor Imaging Data. *Frontiers in Psychiatry* 7:114, 2016.
  12. Luis R. Peraza LR, Colloby SJ, Deboys L, O'Brien JT, Kaiser M, Taylor JP. Regional functional synchronizations in dementia with Lewy bodies and Alzheimer's disease. *International Psychogeriatrics*, 28(7):1143-1151, 2016.
  13. Hutchings F, Han CE, Keller S, Weber B, Taylor PN, Kaiser M. Predicting Surgery Targets in Temporal Lobe Epilepsy through Structural Connectome Based Simulations. *PLOS Computational Biology* 11:e1004642, 2015.
  14. Lo YP, O'Dea R, Crofts JJ, Han CE, Kaiser M. A geometric network model of intrinsic grey-matter connectivity of the human brain. *Scientific Reports* 5:15397, 2015.
  15. Papasavvas CA, Wang Y, Trevelyan AJ, Kaiser M. Gain control through divisive inhibition prevents abrupt transition to chaos in a neural mass model. *Physical Review E* 92:032723, 2015.
  16. Peraza LR, Colloby SJ, Firbank MJ, Greasy GS, McKeith IG, Kaiser M, O'Brien J, Taylor JP. Resting state in Parkinson's disease dementia and dementia with Lewy bodies: Commonalities and differences. *International Journal of Geriatric Psychiatry* 30: 1135–1146, 2015.
  17. Peraza LR, Taylor JP, Kaiser M. Divergent brain functional network alterations in dementia with Lewy bodies and Alzheimer's disease. *Neurobiology of Aging* 36: 2458–2467, 2015.
  18. Kjeldsen H, Kaiser M, Whittington MA. Near-Field Electromagnetic Holography for high-resolution analysis of network interactions in neuronal tissue. *Journal of Neuroscience Methods* 253:1-9, 2015.
  19. Taylor PN, Thomas J, Sinha N, Dauwels J, Kaiser M, Thesen T, Ruths J. Optimal control based seizure abatement using patient derived connectivity. *Frontiers in Neuroscience* 9:202, 2015.
  20. Kaiser M. Neuroanatomy: Connectome Connects Fly and Mammalian Brain Networks. *Current Biology* 25:R416–R418, 2015.
  21. Lim S, Han CE, Uhlhaas P, Kaiser M. Preferential Detachment During Human Brain Development: Age- and Sex- Specific Structural Connectivity in Diffusion Tensor Imaging (DTI) Data. *Cerebral Cortex*, 25(6):1477-1489, 2015.
  22. Tomsett RJ, Ainsworth M, Thiele A, Sanayei M, Chen X, Gieselmann A, Whittington MA, Cunningham MO, Kaiser M. Virtual Electrode Recording Tool for EXtracellular potentials (VERTEX): Comparing multi-electrode recordings from simulated and biological mammalian cortical tissue. *Brain Structure and Function*, 220: 2333-2353, 2015.
  23. Yoo SW, Han CE, Shin JS, Seo SW, Na DL, Kaiser M, Jeong Y, Seong JK. A Network Flow-based Analysis of Cognitive Reserve in Normal Ageing and Alzheimer's Disease. *Nature Scientific Reports* 5:10057, 2015.

24. Taylor PN, Han CE, Schoene-Baked JC, Weber B, Kaiser M. Structural connectivity changes in temporal lobe epilepsy: Spatial features contribute more than topological measures. *Neuroimage: Clinical* 8:322-328, 2015.
25. Lim S, Kaiser M. Overlapping time windows for axon growth lead to higher bidirectionality and non-overlapping time windows produce longer connections in a computer model of neuronal network development. *Biological Cybernetics* 109:275-286, 2015.
26. Kim JS, Kaiser M. From *Caenorhabditis elegans* to the Human Connectome: Lower dispersion and fewer rules reduce evolutionary and developmental costs. *Phil Trans Roy Soc B* 369:20130529, 2014.
27. Huett MT, Kaiser M, Hilgetag CC. Perspective: Network-guided pattern formation of neural dynamics. *Phil Trans Roy Soc B* 369:20130522, 2014.
28. Bauer R, Kaiser M, Stoll E. A computational model for the origins of glioma. *PLOS ONE* 9: e111219, 2014.
29. Taylor PN, Kaiser M, Dauwels J. Structural connectivity based whole brain modelling in epilepsy. *Journal of Neuroscience Methods* 236:51–57, 2014.
30. Peraza L, Kaiser M, Firbank M, Graziadio S, Bonanni L, Onofrij M, Blamire A, O'Brien J, Taylor JP. fMRI resting state networks and their association with cognitive fluctuations in dementia with Lewy bodies. *NeuroImage: Clinical* 4:558–565, 2014.
31. Klein D, Rotarska-Jagiela A, Genc E, Shritaran S, Mohr H, Roux F, Han CE, Kaiser M, Singer W, Uhlhaas PJ. Adolescent Brain Maturation and Cortical Folding: Evidence for Reductions in Gyrification. *PLOS ONE*, 9:e84914, 2014.
32. Kaiser M. The potential of the human connectome as a biomarker of brain disease. *Frontiers in Human Neuroscience* 7:484, 2013.
33. O'Dea R, Crofts J, Kaiser M. Spreading Dynamics On Spatially Constrained Complex Brain Networks. *Journal of the Royal Society: Interface* 10: 20130016, 2013.
34. Bohr I, Kenny E, Blamire A, O'Brien J, Thomas A, Richardson R, Kaiser M. Resting-state functional connectivity in late-life depression: higher global connectivity and more long distance connections. *Frontiers in Neuropsychiatric Imaging and Stimulation* 3:116. doi: 10.3389/fpsy.2012.00116, 2013.
35. Marcelino J, Kaiser M. Critical paths in a metapopulation model of H1N1: Efficiently delaying influenza spreading through flight cancellation. *PLoS Currents Influenza*, doi: 10.1371/4f8c9a2e1fca8, 2012.
36. Zawadzki K, Echtermeyer C, Viana MP, Kaiser M, Costa LdF. Morphological Homogeneity of Neurons: Searching for outliers in inner categories of neuronal cells. *Neuroinformatics* 10:379-389, 2012.
37. Comin CH, Batistista JLB, Viana MP, Costa LdF, Travencolo BAN, Kaiser M. Structure and dynamics: The transition from non-equilibrium to equilibrium in integrate-and-fire dynamics. *Int. J. of Bifurcation and Chaos* 22: 1250174, 2012.
38. Kaiser M, Varier S. Evolution and Development of Brain Networks: From *Caenorhabditis elegans* to *Homo sapiens*. *Network: Computation in Neural Systems* 22:143-147, 2011.
39. Varier S, Kaiser M, Forsyth R. Establishing, versus maintaining, brain function: a neurocomputational model of injury to the immature brain. *Journal of the International Neuropsychological Society* 17: 1030-1038, 2011.
40. Echtermeyer C, Han CE, Rotarska-Jagiela A, Mohr H, Uhlhaas P, Kaiser M. Integrating temporal and spatial scales: Human structural network motifs across age and region-of-interest size. *Frontiers in Neuroinformatics* 5:10, 2011.
41. Kaiser M. A Tutorial in Connectome Analysis: Topological and Spatial Features of Brain Networks. *Neuroimage* 57:892–907, 2011.
42. Echtermeyer C, Rodriguez F, Costa FdL, Kaiser M. Automatic network fingerprinting through singular node motifs. *PLoS ONE* 6(1):e15765, 2011.
43. Varier S, Kaiser M. Neural development features: Spatio-temporal development of the C.

- C. elegans* neuronal network. *PLoS Computational Biology* 7:e1001044, 2011.
44. Kaiser M, Hilgetag CC, Koetter R. Hierarchy and dynamics of neural networks. *Frontiers in Neuroinformatics* 4:112, 2010.
  45. Kaiser M, Hilgetag CC. Optimal hierarchical modular topologies for producing limited sustained activation of neural networks. *Frontiers in Neuroinformatics* 4:8, 2010.
  46. Roopun AK, Simonotto JD, Jenkins A, Schofield IS, Whittaker RG, Kaiser M, Whittington MA, Traub RD, Cunningham MO. A nonsynaptic mechanism underlying interictal discharges in human epileptic neocortex. *Proc. Natl. Acad. Sci. USA* 107:338-343, 2010.
  47. Marcelino J, Kaiser M. Efficient network spreading slow-down through edge removal. *PLoS Currents: Influenza* RRN1005, 2009.
  48. Kaiser M, Hilgetag CC, van Ooyen A. A simple rule for axon outgrowth and synaptic competition generates realistic connection lengths and filling fractions. *Cerebral Cortex*, 19(12):3001-3010, 2009.
  49. Ribeiro P, Simonotto J, Kaiser M, Silva F. Parallel calculation of multi-electrode array correlation networks. *Journal of Neuroscience Methods* 184:357-364, 2009.
  50. da Fontoura Costa L, Rodrigues FA, Hilgetag CC, Kaiser M. Detecting characteristic singular node motifs in complex networks. *Europhysics Letters* 87:18008, 2009.
  51. Roopun AK, Kramer, MA, Carracedo LM, Kaiser M, Davies C, Traub R, Kopell NJ, Whittington MA. Temporal interactions between cortical rhythms. *Frontiers in Neuroscience*, 2(2):145-154, 2008.
  52. Kaiser M. Mean clustering coefficients - the role of isolated nodes and leaves on clustering measures for small-world networks. *New Journal of Physics*, 10:083042, 2008.
  53. Roopun AK, Kramer, MA, Carracedo LM, Kaiser M, Davies C, Traub R, Kopell NJ, Whittington MA. Period concatenation underlies interactions between gamma and beta rhythms in neocortex. *Frontiers in Cellular Neuroscience*, 2:1, 2008.
  54. Kaiser M. Brain architecture: a design for natural computation. *Philosophical Transactions of the Royal Society A*, 365:3033-3045, 2007.
  55. Nisbach F, Kaiser M. Developmental time windows for spatial growth generate multiple-cluster small-world networks. *European Physical Journal B*, 58:185-191, 2007.
  56. Kaiser M, Hilgetag CC. Development of multi-cluster cortical networks by time windows for spatial growth. *Neurocomputing*, 70(10-12):1829-1832, 2007.
  57. da Fontoura Costa L, Kaiser M, Hilgetag CC. Predicting the connectivity of primate cortical networks from topological and spatial node properties. *BMC Systems Biology*, 1:16, 2007.
  58. Kaiser M, Martin R, Andras P, Young MP. Simulation of robustness against lesions of cortical networks. *European Journal of Neuroscience*, 25:3185-3192, 2007.
  59. Kaiser M, Goerner M, Hilgetag CC. Criticality of spreading dynamics in hierarchical cluster networks without inhibition. *New Journal of Physics*, 9:110, 2007.
  60. Lappe M, Kuhlmann S, Oerke B, Kaiser M. The fate of object features during perisaccadic mislocalization. *Journal of Vision*, 6:1282-1293, 2006.
  61. Kaiser M, Hilgetag CC. Nonoptimal component placement, but short processing paths, due to long-distance projections in neural systems. *PLoS Computational Biology*, e95, 2006.
  62. Sporns O, Chialvo D, Kaiser M, Hilgetag C. Organization, development and function of complex brain networks. *Trends in Cognitive Sciences*, 8:418, 2004.
  63. Kaiser M, Hilgetag CC. Edge vulnerability in neural and metabolic networks. *Biological Cybernetics*, 90:311-317, 2004.
  64. Kaiser M, Hilgetag CC. Modelling the development of cortical networks. *Neurocomputing*, 58-60:297-302, 2004.
  65. Hilgetag CC, Kaiser M. Clustered organisation of cortical connectivity. *Neuroinformatics*, 2:353-360, 2004.
  66. Kaiser M, Hilgetag CC. Spatial growth of real-world networks. *Physical Review E*,



69:036103, 2004.

67. Kaiser M, Lappe, M. Perisaccadic mislocalization orthogonal to saccade direction. *Neuron*, 41:293-300, 2004.

#### **Peer-reviewed conference proceedings**

68. Han CE, Peraza LR, Taylor JP, Kaiser M. Predicting Age across Human Lifespan Based on Structural Connectivity from Diffusion Tensor Imaging. IEEE Biomedical Circuits and Systems Conference, 2014.
69. Brust MR, Turgut D, Ribeiro CHC, Kaiser M. Is the Clustering Coefficient a Measure for Fault Tolerance in Wireless Sensor Networks? IEEE International Conference on Communication, 2012.
70. Ribeiro P, Silva F, Kaiser M. Strategies for Network Motifs Discovery. Fifth IEEE International Conference on e-Science, 2009.
71. Smith LS, Austin J, Baker S, Borisyuk R, Eglen S, Feng J, Gurney K, Jackson T, Kaiser M, Overton P, Panzeri S, Quian Quiroga R, Schultz SR, Sernagor E, Smith VA, Smulders TV, Stuart L, Whittington MA, Ingram CD. The CARMEN e-Science pilot project: Neuroinformatics work packages. Proceedings of the UK e-Science All Hands Meeting, 591-598, 2007.

#### **Book chapters**

72. Bauer R, Kaiser M, Cardarelli R, Aielli G. Considerations on Brain-Machine Interfaces from a Neuroscience and Physics Perspective. In: Handbook of Complexity in Medicine. Springer, 2017.
73. Bauer R, Breitwieser L, Di Meglio A, Johard L, Kaiser M, Manca M, Rademakers F, Talanov M, Tchitchigin AD. The BioDynaMo Project: Experience Report. In: Vallverdu, Mazzara, Talanov, Distefano & Lowe: Advanced Research on Biologically Inspired Cognitive Architectures. IGI Global, 2017.
74. Lim S, Hutchings F, Kaiser M. Modeling the impact of lesions in the brain. In: van Ooyen & Butz-Ostendorf, Rewiring the Brain: A Computational Approach to Structural Plasticity in the Adult Brain. Academic Press, 2017.
75. Bauer R, Kaiser M. Organisational Principles of Connectomes: Changes during Evolution and Development. In: Shigeno, Murakami & Nomura, Brain Evolution by Design. Springer, 2017.
76. Wang Y, Hutchings F, Kaiser M. Computational Modelling of Neurostimulation in Brain Diseases. Progress in Brain Research, Vol. 222, Amsterdam: Elsevier, pp. 191-228, 2015.
77. Kaiser M. Neuropathologies and Networks. Encyclopedia of Computational Neuroscience. Springer, 2014.
78. Kaiser M, Hilgetag C. Wiring principles, Optimization. Encyclopedia of Computational Neuroscience. Springer, 2014.
79. Kaiser M, Simonotto J. Limited Spreading: How Hierarchical Networks prevent the Transition to the Epileptic State. In Steyn-Ross/Steyn-Ross: Modeling Phase Transitions in the Brain". Springer, 2010.
80. Kaiser M, Simonotto J. Structural and Functional Dynamics in Cortical and Neuronal Networks. In: Dehmer /Emmert-Streib, Analysis of Complex Networks: From Biology to Linguistics". Wiley-VCH, 2009.
81. Kaiser M. Multiple-scale hierarchical connectivity of cortical networks limits the spread of activity. In: Soltesz/Stanley: Computational Neuroscience in Epilepsy". Academic Press, New York, 2008.
82. Hilgetag CC, Kaiser M. Organization and Function of Complex Cortical Networks. In: beim Graben/Zhou/Thiel/Kurths: Lectures in supercomputational neuroscience: dynamics in complex brain networks". Springer, Heidelberg, 2008.

### **Book reviews**

83. Kaiser M. Book review for 'Rao R: Brain-computer interfacing: an introduction. Cambridge University Press' in *ACM Computing Reviews*, 2014.
84. Kaiser M. Book review for 'Sporns O: Discovering the human connectome. MIT Press' in *ACM Computing Reviews*, 2012.
85. Kaiser M. Book review for 'Oliveira & Stewart: Writing Scientific Software: A Guide to Good Style. Cambridge University Press', *Higher Education Academy (HEA) Subject Centre for Information and Computer Sciences*, 2008.

### **Other publications**

86. Gibson F, Overton P, Smulders T, Schultz S, Eglén SJ, Ingram CD, Panzeri S, Bream P, Sernagor E, Cunningham M, Adams C, Echtermeyer C, Simonotto J, Kaiser M, Swan D, Fletcher M, Lord P. Minimum Information about a Neuroscience Investigation (MINI) Electrophysiology. *Nature Precedings* 1720.1, 2008.
87. Hilgetag CC, Kaiser M. Die Netzwerk-Struktur biologischer Systeme. *BIOforum*, (4):32-33, 2005.
88. Kaiser M. Spatial network growth: Generating small-world, scale-free, and multi-cluster spatial networks. *Technical Report No. 1, IUB School of Engineering and Science*, 2005

### **Press coverage / Public engagement**

1. How even our brains get 'slacker' as we age (author: Dr Yujiang Wang): BBC Radio 4 Today programme, Daily Mail, Daily Mirror, Der Standard, El Mundo, Sun, October 2016
2. Virtual brain surgery could personalise epilepsy treatment. *New Scientist*, December 2015
3. Brain Connectivity Leads Girls to Mature Faster than Boys. Daily Telegraph, Daily Mail, Correio Braziliense, Correio do Estado, Irish Independent, Dân Trí, 自由時報, December 2013
4. British Science Festival 2013: Comic about epilepsy and Science Exhibition, September 2013
5. British Science Festival 2013: How did a brain evolve?
6. Strategies for stopping flu spreading. *MIT Technology Review* & Lenta.ru, May 2012
7. Timing is everything. *U.S. News and Bloomberg Business*, January 2011
8. Stopping spreading: One link at a time. *BBSRC Business*, October 2008
9. Lange Leitungen. *Die Zeit*, 10 August 2006
10. BBC Newcastle radio interview. 1 August 2006
11. Peter Riesbeck: Mobile Eliten. *Berliner Zeitung*, 14 April 2005

### **INVITED TALKS**

#### Conference organization

Organizer of the symposium 'Brain Connectivity: From Structure to Function' for the annual meeting of the British Neuroscience Association. Liverpool, April 2009.

#### Invited speaker

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|---------|---|
| 11/2017 | Computational Neuroscience Winter School, Antibes, France |
| 9/2017  | Birkbeck University, London, UK                           |
| 2/2017  | Plymouth University, UK                                   |
| 12/2016 | BrainModes Workshop, Belgium                              |

8/2016 East China Normal University, Shanghai, China  
 6/2016 Intl Conference on Discrete Models of Complex Systems, Aveiro, Portugal  
 6/2016 'Bringing Big and Complex Data into Clinical Practice', Munich, Germany  
 6/2016 Leeds University, UK  
 5/2016 Lake Como Complex Networks Summer School, Italy  
 5/2016 York University, UK  
 2/2016 Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany  
 1/2016 Sussex University, UK  
 12/2015 Neuroscience R&D Technologies Conference, Barcelona, Spain  
 11/2015 COSMOS EU ITN Workshop, Florence, Italy  
 9/2015 Connectome Workbench (Chair of panel discussion), Cambridge, UK  
 4/2015 Birmingham University, UK  
 3/2015 Porto University, Portugal  
 1/2015 Leicester University, UK  
 8/2014 Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China  
 4/2014 Cambridge University, UK  
 10/2013 Nottingham University, UK  
 6/2013 King's College London, UK  
 4/2013 Manchester University, UK  
 4/2013 CERN, Switzerland  
 2/2013 Freiburg University, Germany  
 5/2012 East China Normal University, Shanghai, China  
 2/2012 Warwick University, UK  
 2/2012 Nottingham Trent University, UK  
 9/2011 North-East Epilepsy Research Meeting, UK  
 6/2011 Porto University, Portugal  
 5/2011 Hong Kong Baptist University, China  
 4/2011 Korea University, South Korea  
 2/2011 Bristol University, UK  
 8/2010 Max-Planck-Institute for Brain Research, Frankfurt, Germany  
 5/2010 RIKEN Brain Science Institute, Tokyo, Japan  
 5/2010 Distinguished Lecture Series, Seoul National University, South Korea  
 5/2010 National Institute of Mathematical Sciences (NIMS), South Korea  
 4/2010 Korean Adv. Institute of Science & Technology (KAIST), South Korea  
 1/2010 Cambridge University, Department of Psychology, UK  
 11/2009 Workshop: Computational Brain, Leicester, UK  
 10/2009 Manchester University, School of Computer Science, UK  
 9/2009 International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Imperial College, London, UK  
 9/2009 North-East Epilepsy Research Meeting, UK  
 9/2009 Workshop: Mathematics for the Computational Brain, Ambleside, UK  
 7/2009 Computational Neuroscience Society (CNS) meeting, Berlin, Germany  
 5/2009 Opening Symposium, Department of Brain and Cognitive Sciences, Seoul National University, South Korea  
 2/2009 Edinburgh University, School of Informatics, UK  
 2/2009 Royal Edinburgh Hospital, UK  
 11/2008 Imperial College London, Hammersmith Hospital, fMRI seminar, UK  
 11/2008 Imperial College London:  
 Workshop 'Complexity and Networks-Neuroscience', UK  
 10/2008 SAFECOMP: International Conference on Computer Safety, Reliability and Security (talk and panel discussion), Newcastle, UK

9/2008 Strathclyde Univ.: Workshop on Complexity in the Brain, Glasgow, UK  
 12/2007 Oxford University, John Radcliffe University Hospital, UK  
 10/2007 Oxford University, Saïd Business School, UK  
 3/2007 Northwestern Institute of Complex Systems: Complexity Conference,  
 Northwestern University, USA  
 3/2007 Max-Planck-Institute for Brain Research, Frankfurt, Germany  
 2/2007 Okinawa Institute of Science and Technology, Japan  
 1/2007 Santa Fe Institute: Workshop on Network Robustness, New Mexico, USA  
 10/2006 Durham University, UK  
 8/2006 Edinburgh University, UK  
 6/2006 European Bioinformatics Institute: Workshop on Biological Networks, Industry  
 Programme, Cambridge, UK  
 4/2006 Aston University, Birmingham, UK  
 8/2005 University of Dusseldorf, Dusseldorf, Germany  
 10/2004 Neurosciences Institute, San Diego, USA  
 8/2004 Ruhr-University Bochum, Bochum, Germany  
 6/2004 Mediterranean Institute for Adv. Studies (IMEDEA), Spain

Conference talks (selected for a talk by programme committees)

2017 American Epilepsy Society Conference, Washington D.C., USA  
 2017 European Focused Ultrasound (EUFUS) Conference, Leipzig, Germany  
 2017 Neurotechnology R&D Conference, London, UK  
 2017 Bernstein Conference, Goettingen, Germany  
 2017 NetSci Conference, Indianapolis, USA  
 2017 3R Meeting, Newcastle upon Tyne, UK  
 2017 Computing At Schools North East (CASNE), Newcastle upon Tyne, UK  
 2017 British Neuroscience Association Conference, Birmingham, UK  
 2017 Computational Neurology Conference, Newcastle upon Tyne, UK  
 2016 INCF Neuroinformatics Conference, Reading, UK  
 2016 European Conference for Mathematical and Theoretical Biology, Nottingham, UK  
 2015 Neuroscience Research Technologies, Barcelona, Spain  
 2015 ISMAR International Neuroimaging Conference, Shanghai, China  
 2015 NetSci Conference, Zaragoza, Spain  
 2014 Computational Neuroscience and Neuroinformatics workshop, Edinburgh, UK  
 2014 Mathematics of Brain Dynamics workshop, Birmingham University, UK  
 2013 American Epilepsy Society Annual Meeting, Washington D.C., USA  
 2012 eFutures: Building Brains Workshop, Edinburgh University, UK  
 2012 Opening symposium, BCS MRI Center, Seoul National University, Korea  
 2012 Fusion Science Workshop in Translational Neuroimaging,  
 Korea University, Seoul, Korea  
 2012 Organization of hierarchical neural networks, Bremen, Germany  
 2011 NIPS Satellite: Linking Brain Structure to Function, Granada, Spain  
 2011 Computational Neuroscience Society (CNS) meeting, Stockholm, Sweden  
 2011 Brain Connectivity Workshop (BCW) annual meeting, Montreal, Canada  
 2011 British Neuroscience Association (BNA) annual meeting, Harrogate, UK  
 2010 International Net-Works Conference (keynote speaker), Zaragoza, Spain  
 2010 UK INCF Neuroinformatics meeting, Edinburgh, UK  
 2009 British Neuroscience Association (BNA) annual meeting, Liverpool, UK  
 2009 International Conference on Network Science (NetSci 2009), Venice, Italy  
 2008 International Conference on Network Science (NetSci 2008), Norwich, UK  
 2007 Mathematical Neuroscience Network Meeting, Warwick University, UK

2007 Society for Neuroscience Annual Meeting, San Diego, USA  
2006 Computational Neuroscience Society - Annual Meeting, Edinburgh, UK  
2006 Theoretical Neuroscience Meeting, Bristol, UK  
2005 Society for Neuroscience Annual Meeting, Washington D.C., USA  
2005 Theoretical Neuroscience Meeting, Loughborough, UK  
2004 & 2005 Intl. Conference on Cognitive and Neural Systems (ICONS), Boston, USA