

Curriculum Vitae: Dr Ben D. Fulcher

CONTACT INFORMATION

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POSITIONS HELD

- 2017–** Senior Lecturer in Brain Dynamics and Neurophysics, School of Physics, The University of Sydney.
- 2015–2017** NHMRC Early Career Fellow, Brain and Mental Health Laboratory, School of Psychological Sciences, Monash University.
- 2013–2014** Research Fellow (Computational and Experimental Neuroscience), Brain and Mental Health Laboratory, School of Psychological Sciences, Monash University.

EDUCATION

- 2008–2012** D.Phil., ‘*Highly comparative time-series analysis*’, Department of Physics, Oxford University.
- 2008** M.Sc., School of Physics, The University of Sydney.
- 2004–2007** B.Sc. (Adv.) (Hons.) with a University Medal, The University of Sydney. Majors: Physics, Nanoscience and Technology.

GRANTS (MAJOR)

All amounts are given in AUD\$:

- 2025** NHMRC Ideas Grant 2037172: *Brain signature of loss-of-consciousness across species* (2025–2029). CIs: N. Tsuchiya, **B.D. Fulcher**, D. Shimaoka, N. Price, A. Bryant. Total awarded (from NHMRC): \$1,111,302.
- 2024** ARC Future Fellowship Project: *Unravelling a Rainbow: Complex Systems Methods to Transform Sleep Research*. (2025–2028). **B.D. Fulcher**. Total awarded (from ARC): \$1,066,792.
- 2023** ARC Discovery Project: *Evaluating the Network Neuroscience of Human Cognition to Improve AI* (2024–2026). CIs: J.M. Shine, J. Lizier, **B.D. Fulcher**. Total awarded: \$853,565.
- 2021** The University of Sydney School of Physics Grand Challenge: *Nanoscale brain navigation for targeted drug delivery* (2021–2022). CIs: **B.D. Fulcher**, S. Wickham. Total awarded: \$250,000.
- 2020** NHMRC Ideas Grant: *Integrating theory-guided and data-driven approaches for measuring consciousness* (2020–2024). CIs: N. Tsuchiya, **B.D. Fulcher**, O. Carter, T. Andrillon, H. Hogendoorn. Grant ID: GNT1183280. Total awarded: \$1,295,513.

- 2018** NHMRC Project Grant: *A dimensional approach to mapping the risk mechanisms of mental illness* (2018–2022). CIs: A. Fornito, M. Bellgrove, M. Yücel, **B.D. Fulcher**, Z. Hawi. Grant ID: GNT1146292. Total awarded: \$1,654,808.
- 2015** NHMRC Early Career Fellowship (2015–2018): *From brain maps to mechanisms: modeling the pathophysiology of schizophrenia.* **B.D. Fulcher.** Grant ID: GNT1089718. Total awarded: \$309,436.

GRANTS (MINOR)

Grants listed in this section are internal grants, small amounts of money, or when listed as an associate (not chief) investigator.

- 2023** The University of Sydney School of Physics Grand Challenge: *Quantum Many-Body Techniques for Machine Learning.* Lead CIs: **B.D. Fulcher***, S. Mahmoodian*. Total awarded: \$50 000.
- 2023** Selby Research Award. CI: **B.D. Fulcher.** Total awarded: \$23 000.
- 2022** The University of Sydney School of Physics Grand Challenge: *Quantum Many-Body Techniques for Machine Learning.* Lead CIs: **B.D. Fulcher***, S. Mahmoodian*. Total awarded: \$50 000.
- 2019** The University of Sydney and Fudan University Brain and Intelligence Science Alliance: *Neural oscillations across space and time: properties and functional roles.* CIs: P. Gong and J. Feng. AIs: P. Martin, P. Robinson, A. D’Rozario, M. Shine, **B.D. Fulcher**, T. Kao, S. Postnova, J. Gao. Total awarded: \$280 000.
- 2019** The University of Sydney Shanghai Jiaotong University Mobility Scheme: *Physical, data-driven approaches for clinical neuroimaging.* CI: **B.D. Fulcher.** Total awarded: \$5000.
- 2018** The University of Sydney Centre for Complex Systems’ Emerging Aspirations Funding Scheme: *Complex systems perspectives on dementia: population modelling, networks and information processing.* CIs: **B.D. Fulcher**, J.M. Shine, J. Lizier. Total awarded: \$12 500.
- 2018** Sydney Nanoscience Grand Challenge: *Molecular nano-robotics for health: navigating the body to diagnose and treat early disease.* Lead CIs: Shelley Wickham and Anna Waterhouse. Total awarded: \$300 000.
- 2018** Strategic Education Grant, Faculty of Science, University of Sydney: *A new interdisciplinary, project-based physics unit, PHYS3888.* CIs: B. Kuhlmeiy, M. Wheatland, **B.D. Fulcher**, Z. Kuncic, A. Tuniz. Total awarded: \$11 904.
- 2016** Research Development Grant, Monash Institute of Cognitive and Clinical Neurosciences, Monash University: **B.D. Fulcher.** Total awarded: \$10 000.
- 2016** CASS Foundation Travel Award to attend *25th Annual Computational Neuroscience Meeting, CNS 2016:* **B.D. Fulcher.** Total awarded: \$2000.
- 2016** Research Development Grant, Deakin University, *An investigation of neuroplasticity in autism spectrum disorder (ASD) using brain stimulation and neuroimaging.* CIs: M. Kirkovski, P. Enticott. AIS: M. Berk, P. Fitzgerald, N. Rogasch, A. Fornito, **B.D. Fulcher**, and L. Oberman. Total awarded: \$19 991.50.
- 2016** Monash University, School of Psychological Sciences Travel Grant: **B.D. Fulcher.** Total awarded: \$1500.

- 2015** Psychology Research Initiative Fund, Monash University, *An innovative app-based platform for real-world health and behavior monitoring*: **B.D. Fulcher**, M. Yücel, A. Fornito, A. Carter, and G. Youssef. Total awarded: \$11 121.
- 2015** Deakin Faculty Research Development Grant, *Understanding the social brain through functional neuroimaging and brain stimulation*. CIs: M. Kirkovski, P. Enticott. AIs: M. Berk, P. Fitzgerald, A. Fornito, N. Rogasch, **B.D. Fulcher**. Total awarded: \$10 000.
- 2010** Balliol Interdisciplinary Institute Grant for founding the *Interdisciplinary Perspectives on Time Series* project, a weekly interdisciplinary seminar series on time-series analysis, Balliol College, University of Oxford. Total awarded: £850.

PUBLICATIONS

Equal contributions are indicated as *. Openly accessible work is denoted as . Links to preprints are given to published articles that are not openly accessible. Relevant open code resources related to publications are denoted as , datasets as , and websites as .

1. Z. Liu, A.I. Luppi, J.Y. Hansen, Y.E. Tian, A. Zalesky, B.T. Thomas Yeo, **B.D. Fulcher**, B. Misic. Benchmarking methods for mapping functional connectivity in the brain. *Nature Methods* (accepted). [bioRxiv preprint !\[\]\(0551a83d441798e532995956b603f604_img.jpg\)](#).
2. A.G. Bryant, K. Aquino, L. Parkes, A. Fornito, **B.D. Fulcher**. Extracting interpretable signatures of whole-brain dynamics through systematic comparison. *PLoS Computational Biology* (accepted). [Paper !\[\]\(54ee180c0037b66a36ce2219a481afde_img.jpg\)](#). [bioRxiv preprint !\[\]\(73ae654e8897db9b21f1bf9d9efc07ef_img.jpg\)](#).
3. R. Maran, E.J. Müller, **B.D. Fulcher**. Analyzing the Brain's Dynamic Response to Targeted Stimulation using Generative Modeling. *Network Neuroscience* (accepted). [Paper !\[\]\(278ecf8622de254ce2917d264729f4b0_img.jpg\)](#). [arXiv preprint !\[\]\(3b5d74d5eba68301b1a5c22417b6b52c_img.jpg\)](#).
4. A. Arnatkevičiūtė, A. Fornito, J. Tong, K. Pang, M.A. Bellgrove*, **B.D. Fulcher***. Linking GWAS to pharmacological treatments for psychiatric disorders. *JAMA Psychiatry* (2024). [Paper. medRxiv preprint !\[\]\(95826e66cf958c3135662f918c38faf5_img.jpg\)](#).
5. K. Owens and **B.D. Fulcher**. Parameter inference from a non-stationary unknown process. *Chaos* **34**: 101501 (2024). [Paper !\[\]\(5561815f7b3c21cd4837848c1b3a53b8_img.jpg\)](#). [arXiv preprint !\[\]\(07e9f8bb2d9a8e0c79a2191f366ec50f_img.jpg\)](#).
6. B. Harris, L. Gollo, **B.D. Fulcher**. Tracking the distance to criticality in systems with unknown noise. *Physical Review X* **14**: 031021 (2024). [Paper !\[\]\(52e0a18eb8718406aa94c7ba9d56e87c_img.jpg\)](#). [arXiv preprint !\[\]\(e404c75816adc7665fc98bd0aeb3c80f_img.jpg\)](#). [Media article in *The Conversation* media article.](#)
7. P. Cajic, D. Agius, O.M. Cliff, J.M. Shine, J.T. Lizier*, **B.D. Fulcher***. On the information-theoretic formulation of network participation. *Journal of Physics: Complexity* **5**: 015021 (2024). [Paper !\[\]\(f36a8047a0651eed85d4a9a9e6f030c4_img.jpg\)](#). [arXiv preprint !\[\]\(cadad4c65bd82942e4f9948dd6f8b017_img.jpg\)](#).
8. T. Chau, J. Tiego, L. Brown, O.J. Mellahn, B. Johnson, A. Arnatkevičiūtė, **B.D. Fulcher**, N. Matthews, M. Bellgrove. The Distribution of Parent-Reported ADHD and Subclinical Autistic Traits in Children With and Without an ADHD Diagnosis. *JCPP Advances* **4**: e12223 (2024). [Paper !\[\]\(43ff43be84162ed1d5f1895e4551fad3_img.jpg\)](#). [PsyArXiv preprint !\[\]\(71325a161874de152472363a6c16c623_img.jpg\)](#).

9. N. Bailey, **B.D. Fulcher**, B. Caldwell, A. Hill, B. Fitzgibbon, H. van Dijk, P.B. Fitzgerald. Uncovering a stability signature of brain dynamics associated with meditation experience using massive time-series feature extraction. *Neural Networks* **171**: 171 (2024).
Paper. [bioRxiv preprint](#) .
10. M. Markicevic, O. Sturman, J. Bohacek, M. Rudin, V. Zerbi*, N. Wenderoth*, **B.D. Fulcher***. Neuromodulation of striatal D1 cells shapes BOLD fluctuations in anatomically connected thalamic and cortical regions. *eLife* **12**: e78620 (2023).
Paper . [bioRxiv preprint](#) .
11. G. Shafiei, **B.D. Fulcher**, B. Voytek, T.D. Satterthwaite, S. Baillet, B. Misic. Neurophysiological signatures of cortical micro-architecture. *Nature Communications* **14**: 6000 (2023).
Paper . [bioRxiv preprint](#) .
12. O.M. Cliff, J.T. Lizier, N. Tsuchiya, **B.D. Fulcher**. Unifying pairwise interactions in complex dynamics. *Nature Computational Science* (2023).
Paper. [Sharable full-text](#). [arXiv preprint](#) . [Commentary in Nature Computational Science](#). [pyspi software package](#) . [Media article in The Conversation](#).
13. S. Chopra, S. Oldham, A. Segal, A. Holmes, K. Sabaroedin, E.R. Orchard, S.M. Francey, B. O'Donoghue, V. Cropley, B. Nelson, J. Graham, L. Baldwin, J. Tiego, H.P. Yuen, K. Allott, M. Alvarez-Jimenez, S. Harrigan, **B.D. Fulcher**, K. Aquino, C. Pantelis, S.J. Wood, M. Bellgrove, P. McGorry, A. Fornito. Network-based spreading of grey matter changes across different stages of psychosis. *JAMA Psychiatry* (2023).
Paper. [medRxiv preprint](#) .
14. J.C. Pang, K.M. Aquino, M. Oldehinkel, P.A. Robinson, **B.D. Fulcher**, M. Breakspear, A. Fornito. Geometric constraints on human brain function. *Nature* (2023).
Paper . [bioRxiv preprint](#) . [Media article](#).
15. S. Suzuki, X. Zhang, A. Dezfouli, L. Braganza, **B.D. Fulcher**, L. Parkes, L.F. Fontenelle, B.J. Harrison, C. Murawski, C. Suo, M. Yücel. Individuals with problem gambling and obsessive-compulsive disorder learn through distinct reinforcement mechanisms. *PLoS Biology* **21**: e3002031 (2023).
Paper .
16. A. Arnatkevičiūtė, R.D. Markello, **B.D. Fulcher**, B. Mišić, A. Fornito. Towards best practices for imaging transcriptomics. *Biological Psychiatry* **93**: P391 (2023).
Paper . [OSF preprint](#) .
17. N. Decat, J. Walter, Z.H. Koh, P. Sribanditmongkol, **B.D. Fulcher**, J.M. Windt, T. Andrillon, N. Tsuchiya. Beyond traditional visual sleep scoring: massive feature extraction and data-driven clustering of sleep time series. *Sleep Medicine* **98**: 39 (2022).
Paper. [bioRxiv preprint](#) .
18. N.H. Barbara, T.R. Bedding, **B.D. Fulcher**, S.J. Murphy, T. Van Reeth. Classifying *Kepler* light curves for 12,000 A and F stars using supervised feature-based machine learning. *Monthly Notices of the Royal Astronomical Society* **514**: 2793 (2022).
Paper . [arXiv preprint](#) .
19. S. Oldham, **B.D. Fulcher**, K. Aquino, A. Arnatkevičiūtė, C. Paquola, R. Shishegar, A. Fornito. Modeling spatial, developmental, physiological, and topological constraints on human brain connec-

- tivity. *Science Advances* **8**: eabm6127 (2022).
Paper . [bioRxiv preprint](#) .
20. P.H. Siu, E. Müller, V. Zerbi, K. Aquino, **B.D. Fulcher**. Extracting dynamical understanding from neural-mass models of mouse cortex. *Frontiers in Computational Neuroscience* **16**: 847336 (2022).
Paper . [bioRxiv preprint](#) .
21. K.M. Aquino, **B.D. Fulcher**, S. Oldham, L. Parkes, L. Gollo, G. Deco, A. Fornito. On the intersection between data quality and dynamical modelling of large-scale fMRI signals. *NeuroImage*. **256**: 119051 (2022).
Paper . [bioRxiv preprint](#) .
22. A. Arnatkevičiūtė, **B.D. Fulcher**, M.A. Bellgrove, A. Fornito. Imaging transcriptomics of brain disorders. *Biological Psychiatry: Global Open Science* **2**: 319 (2022).
Paper . [PsyArXiv preprint](#) .
23. J.M. Shine, M. Li, O. Koyejo, **B.D. Fulcher**, J.T. Lizier. Nonlinear Reconfiguration of Network Edges, Topology and Information Content During an Artificial Learning Task. *Brain Informatics* **8**: 26 (2021).
Paper . [bioRxiv preprint](#) .
24. R. Markello, A. Arnatkevičiūtė, J.-B. Poline, **B.D. Fulcher**, A. Fornito, B. Mišić. Standardizing workflows in imaging transcriptomics with the **abagen** toolbox. *eLife*. **10**: e72129 (2021).
Paper . [bioRxiv preprint](#) .
25. A. Arnatkevičiūtė, **B.D. Fulcher**, M.A. Bellgrove, A. Fornito. Where the genome meets the connectome: Understanding how genes shape the human brain connectivity. *NeuroImage*. **244**: 118570 (2021).
Paper . [PsyArXiv preprint](#) .
26. A. Arnatkevičiūtė, **B.D. Fulcher**, S. Oldham, J. Tiego, C. Paquola, Z.F. Gerring, K.M. Aquino, Z. Hawi, B. Johnson, G.M. Ball, M. Klein, G. Deco, B. Franke, M. Bellgrove, A. Fornito. Genetic influences on hub connectivity of the human connectome. *Nature Communications*. **12**: 4237 (2021).
Paper . [bioRxiv preprint](#) . [Reproducible code](#) . [Data](#) .
27. **B.D. Fulcher**, A. Arnatkevičiūtė, A. Fornito. Overcoming false-positive gene-category enrichment in the analysis of spatially resolved transcriptomic brain atlas data. *Nature Communications*. **12**: 2669 (2021).
Paper . [bioRxiv preprint](#) . [Reproducible code](#) . [Data](#) . [Toolbox](#) .
28. O.M. Cliff, L. Novelli, **B.D. Fulcher**, J.M. Shine, J.T. Lizier. Assessing the significance of directed and multivariate measures of linear dependence between time series. *Physical Review Research*. **3**: 013145 (2021).
Paper . [arXiv preprint](#) . [Toolbox](#) .
29. M. Biabani, A. Fornito, J.P. Coxon, **B.D. Fulcher**, N.C. Rogasch. The correspondence between EMG and EEG measures of changes in cortical excitability following transcranial magnetic stimulation. *The Journal of Physiology* **599**: 2907 (2021).
Paper. [bioRxiv Preprint](#) .
30. H.Y. Lau, A. Fornito, **B.D. Fulcher**. Scaling of gene transcriptional gradients with brain size across mouse development. *NeuroImage*. **224**: 117395 (2021).

- Paper . [bioRxiv preprint](#) . Data . Reproducible code: data analysis . Reproducible code: modeling .
31. G. Shafiei, R.D. Markello, R. Vos de Wael, B.C. Bernhardt, **B.D. Fulcher**, B. Mišić. Topographic gradients of intrinsic dynamics across neocortex. *eLife*. **9**: e62116 (2020).
Paper . [bioRxiv preprint](#) .
 32. E. Müller, B. Munn, L.J. Hearne, J.B. Smith, **B.D. Fulcher**, A. Arnatkevičiūtė, D.J. Lurie, L. Cocchi, J.M. Shine. Core and matrix thalamic sub-populations relate to spatiotemporal cortical connectivity gradients. *NeuroImage*. **222**: 117224 (2020).
Paper . [bioRxiv preprint](#) .
 33. **B.D. Fulcher**, C.H. Lubba, S.S. Sethi, N.S. Jones. A self-organizing, living library of time-series data. *Scientific Data*. **7**: 213 (2020).
Paper . [arXiv preprint](#) . Reproducible code . Data . Website .
 34. J. Fallon, P. Ward, L. Parkes, S. Oldham, A. Arnatkevičiūtė, A. Fornito, **B.D. Fulcher**. Timescales of spontaneous fMRI fluctuations relate to structural connectivity in the brain. *Network Neuroscience*. **4**: 788 (2020).
Paper . [bioRxiv preprint](#) . Reproducible code . Data .
 35. S.S. Sethi, N.S. Jones, **B.D. Fulcher**, L. Picinali, D.J. Clink, H. Klinck, C.D.L. Orme, P.H. Wrege, R.M. Ewers. Characterizing soundscapes across diverse ecosystems using a universal acoustic feature set. *Proceedings of the National Academy of Sciences of the United States of America*. **117**: 17049 (2020).
Paper. [bioRxiv preprint](#) . Reproducible code . Data .
 36. M. Markicevic, **B.D. Fulcher**, C. Lewis, F. Helmchen, M. Rudin, V. Zerbi, and N. Wenderoth. Cortical excitation :inhibition imbalance causes abnormal brain network dynamics as observed in neurodevelopmental disorders. *Cerebral Cortex*. bhaa084 (2020).
Paper . [bioRxiv preprint](#) . Reproducible code .
 37. S.J. Murphy, N.H. Barbara, T.R. Bedding, D. Hey, **B.D. Fulcher**. Finding binaries from phase modulation of pulsating stars with *Kepler*: VI. Orbits for 10 new binaries with mischaracterised primaries. *Monthly Notices of the Royal Astronomical Society*. staa562 (2020).
Paper. [arXiv preprint](#) .
 38. K. Aquino*, **B.D. Fulcher***, L. Parkes, K. Sabaroedin, A. Fornito. Identifying and removing widespread signal deflections from fMRI data: Rethinking the global signal regression problem. *NeuroImage*. **212**: 116614 (2020).
Paper . [bioRxiv preprint](#) . DiCER code . Results .
 39. C.H. Lubba, S.S. Sethi, P. Knaute, S.R. Schultz, N.S. Jones*, **B.D. Fulcher***. *catch22*: CAnonical Time-series CHaracteristics. *Data Mining and Knowledge Discovery*. **33**: 1821 (2019).
Paper . [arXiv preprint](#) . *catch22* package . Reproducible code . Data .
 40. A. Arnatkevičiūtė, **B.D. Fulcher**, A. Fornito. Uncovering the transcriptional signatures of hub connectivity in neural networks. *Frontiers in Neural Circuits* **13**: 63 (2019).
Paper . [psyArxiv preprint](#) .
 41. S. Oldham, **B.D. Fulcher**, L. Parkes, A. Arnatkevičiūtė, C. Suo, A. Fornito. Consistency and differences between centrality metrics across distinct classes of networks. *PLoS ONE* **14**: e0220061

- (2019).
[Paper](#) . [arXiv preprint](#) .
42. **B.D. Fulcher**. Discovering conserved properties of brain organization through multimodal integration and interspecies comparison. *Journal of Experimental Neuroscience* **13**: 1 (2019).
[Paper](#) .
43. **B.D. Fulcher**, J.D. Murray, V. Zerbi, X.-J. Wang. Multimodal gradients across mouse cortex. *Proceedings of the National Academy of Sciences of the United States of America* **116**: 4689 (2019).
[Paper](#). [bioRxiv preprint](#) . [Reproducible code](#) . [Data](#) . [Media article](#).
44. A. Arnatkevičiūtė, **B.D. Fulcher**, A. Fornito. A practical guide to linking brain-wide gene expression and neuroimaging data. *NeuroImage* **189**: 353 (2019).
[Paper](#). [bioRxiv preprint](#) . [Reproducible code](#) . [Data](#) .
45. N.W. Bailey, K.E. Hoy, N.C. Rogasch, R.H. Thomson, S. McQueen, D. Elliot, C.M. Sullivan, **B.D. Fulcher**, Z.J. Daskalakis, P.B. Fitzgerald. Differentiating responders and non-responders to rTMS treatment for depression after one week using resting EEG connectivity measures. *Journal of Affective Disorders* **242**: 68 (2019).
[Paper](#).
46. A. Fornito, A. Arnatkevičiūtė, **B.D. Fulcher**. Bridging the gap between connectome and transcriptome. *Trends in Cognitive Sciences* **23**: 34 (2019).
[Paper](#). [OSF preprint](#) .
47. M.T. Wilson, **B.D. Fulcher**, P.K. Fung, P.A. Robinson, A. Fornito, N.C. Rogasch. Biophysical modeling of neural plasticity induced by transcranial magnetic stimulation. *Clinical Neurophysiology* **129**(6): 1230 (2018).
[Paper](#). [bioRxiv preprint](#) .
48. E.M. Seabrook, M.L. Kern, **B.D. Fulcher**, N.S. Rickard. Predicting depression from language-based emotion dynamics: Longitudinal analysis of Facebook and Twitter status updates. *Journal of Medical Internet Research* **20**(5): e168 (2018).
[Paper](#) .
49. **B.D. Fulcher**^{*}, A. Arnatkevičiūtė^{*}, R. Pockock, A. Fornito. Hub connectivity, neuronal diversity, and gene expression in the *Caenorhabditis elegans* connectome. *PLoS Computational Biology* **14**(2): e1005989 (2018).
[Paper](#) . [Reproducible code](#) . [Data](#) .
50. L. Parkes, **B.D. Fulcher**, M. Yücel, A. Fornito. An evaluation of the efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI. *NeuroImage* **171**: 415 (2018).
[Paper](#) .
51. **B.D. Fulcher**^{*}, S. Cohen^{*}, S.M.W. Rajaratnam, R. Conduit, J.P. Sullivan, M.A. St Hilaire, A.J.K. Phillips, T. Loddenkemper, S.V. Kothare, K. McConnell, P. Braga-Kenyon, A. Shlesinger, J. Potter, F. Bird, W. Ahearn, K.M. Cornish, S.W. Lockley. Sleep patterns predictive of daytime challenging behavior in individuals with low-functioning autism. *Autism Research* **11**: 391 (2018).
[Paper](#).

52. N.W. Bailey, K.E. Hoy, N.C. Rogasch, R.H. Thomson, S. McQueen, D. Elliot, C.M. Sullivan, **B.D. Fulcher**, Z.J. Daskalakis, P.B. Fitzgerald. Responders to rTMS for depression show increased fronto-midline theta and theta connectivity compared to non-responders. *Brain Stimulation* **11**(1): 190 (2018).
[Paper](#).
53. S. Cohen, **B.D. Fulcher**, S.M.W. Rajaratnam, R. Conduit, J.P. Sullivan, M.A. St Hilaire, A.J.K. Phillips, T. Loddenkemper, S.V. Kothare, K. McConnell, P. Braga-Kenyon, A. Shlesinger, J. Potter, F. Bird, W. Ahearn, K.M. Cornish, S.W. Lockley. Behaviorally determined sleep phenotypes are robustly associated with adaptive functioning in individuals with low-functioning autism. *Scientific Reports* **7**: 14228 (2017).
[Paper](#) .
54. **B.D. Fulcher**, N. S. Jones. *hctsa*: A computational framework for automated time-series phenotyping using massive feature extraction. *Cell Systems* **5**(5): 527 (2017).
[Paper](#) . [bioRxiv preprint](#) . [arXiv preprint](#) . [hctsa toolbox](#) . [Reproducible code \(Drosophila\)](#) . [Data](#) . [Reproducible code \(C. elegans\)](#) . [Data](#) .
55. L. Parkes, **B.D. Fulcher**, M. Yücel, A. Fornito. Transcriptional signatures of connectomic subregions of the human striatum. *Genes, Brain & Behavior* **25**: 1176 (2017).
[Paper](#) .
56. S.S. Sethi*, V. Zerbi*, N. Wenderoth, A. Fornito, **B.D. Fulcher**. Structural connectome topology relates to regional BOLD signal dynamics in the mouse brain. *Chaos* **27**: 047405 (2017).
[Paper](#). [bioRxiv preprint](#) .
57. **B.D. Fulcher** and A. Fornito. A transcriptional signature of hub connectivity in the mouse connectome. *Proceedings of the National Academy of Sciences of the United States of America* **113**: 1435 (2016).
[Paper](#) .
58. S.T.E. Baker, D.I. Lubman, M. Yücel, N.B. Allen, S. Whittle, **B.D. Fulcher**, A. Zalesky, A. Fornito. Developmental changes in brain network hub connectivity in late adolescence. *The Journal of Neuroscience* **35**: 9078 (2015).
[Paper](#) .
59. **B.D. Fulcher**, N.S. Jones. Highly comparative feature-based time-series classification. *IEEE Transactions on Knowledge and Data Engineering* **26**: 3026 (2014).
[Paper](#) . [arXiv preprint](#) .
60. **B.D. Fulcher**, A.J.K. Phillips, S. Postnova, P.A. Robinson. A physiologically based model of orexinergic stabilization of sleep and wake. *PLoS ONE* **9**: e91982 (2014).
[Paper](#) .
61. A.J.K. Phillips, **B.D. Fulcher**, P.A. Robinson, E.B. Klerman. Mammalian rest/activity patterns explained by physiologically based modeling. *PLoS Computational Biology* **9**: e1003213 (2013).
[Paper](#) .
62. **B.D. Fulcher**, M.A. Little, N.S. Jones. Highly comparative time-series analysis: the empirical structure of time series and their methods. *Journal of the Royal Society Interface* **10**: 20130048 (2013).
[Paper](#) . [arXiv preprint](#) .

63. **B.D. Fulcher**, X.Y. Cui, B. Delley, C. Stampfl. Hardness analysis of cubic metal mononitrides from first principles. *Physical Review B* **85**: 184106 (2012).
[Paper](#).
64. P.A. Robinson, A.J.K. Phillips, **B.D. Fulcher**, M. Puckeridge, J.A. Roberts. Quantitative modeling of sleep dynamics. *Philosophical Transactions of the Royal Society A* **369**: 3840 (2011).
[Paper](#) .
65. M. Puckeridge, **B.D. Fulcher**, A.J.K. Phillips, P.A. Robinson. Incorporation of caffeine into a quantitative model of fatigue and sleep. *Journal of Theoretical Biology* **273**: 44 (2011).
[Paper](#).
66. **B.D. Fulcher**, A.J.K. Phillips, P.A. Robinson. Quantitative physiologically based modeling of subjective fatigue during sleep deprivation. *Journal of Theoretical Biology* **264**: 407 (2010).
[Paper](#).
67. **B.D. Fulcher**, A.J.K. Phillips, P.A. Robinson. Modeling the impact of impulsive stimuli on sleep-wake dynamics. *Physical Review E* **78**: 051920 (2008).
[Paper](#).

BOOK CHAPTERS

68. Arnatkevičiūtė, **B.D. Fulcher**, A. Fornito. Uncovering the genetics of the human connectome. *Connectome Analysis - Characterization, Methods and Applications*: Chapter 14, 309–341 (AP Academic Press, 2023).
[Book chapter](#).
69. **B.D. Fulcher**. Feature-based time-series analysis. In: *Feature Engineering for Machine Learning and Data Analytics*, 87–116 (CRC Press, 2018).
[Book chapter](#). [arXiv preprint](#) .
70. P.A. Robinson, S. Postnova, R.G. Abeysuriya, J.W. Kim, J.A. Roberts, L. McKenzie-Sell, A. Karanjai, C.C. Kerr, F. Fung, R. Anderson, M.J. Breakspear, P.M. Drysdale, **B.D. Fulcher**, A.J.K. Phillips, C.J. Rennie, G. Yin. A Multiscale “Working Brain” Model. In: *Validating Neuro-Computational Models of Neurological and Psychiatric Disorders* (eds. B.S. Bhattacharya and F.N. Chowdhury) pp 107–140 (Springer, 2015).
[Book chapter](#).
71. P.A. Robinson, A.J.K. Phillips, **B.D. Fulcher**, M. Puckeridge, J.A. Roberts, C.J. Rennie. Quantitative modeling of sleep dynamics. In: *Sleep and Anesthesia: Neural Correlates in Theory and Experiment* (ed. A. Hutt) pp 45–68 (Springer, 2011).
[Book chapter](#).

PEER-REVIEWED FULL CONFERENCE PAPERS

72. T. Henderson, A.G. Bryant, **B.D. Fulcher**. Never a Dull Moment: Distributional Properties as a Baseline for Time-Series Classification. 1st International Workshop on Temporal Analytics at *The 27th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)* (2023).
[arXiv preprint](#) .

73. T. Henderson, **B.D. Fulcher**. An Empirical Evaluation of Time-Series Feature Sets. Systematic Feature Engineering for Time-Series Data Mining Workshop at *21st IEEE International Conference on Data Mining (ICDM)* (2021).
Paper. [arXiv preprint](#) .
74. C.H. Lubba, **B.D. Fulcher**, S.R. Schultz, N.S. Jones. Efficient peripheral nerve firing characterisation through massive feature extraction. *9th International IEEE EMBS Neural Engineering Conference* (2018).
Paper. [bioRxiv preprint](#) .
75. **B.D. Fulcher**, A.E. Georgieva, C.W.G. Redman, N.S. Jones. Highly comparative fetal heart rate analysis. *34th Annual International Conference of the IEEE EMBS* (2012).
Paper.

COMMENTARIES

76. J.M. Shine, A. Arnatkevičiūtė, A. Fornito, **B.D. Fulcher**. Navigating a Complex Landscape: Using Transcriptomics to Parcellate the Human Cortex. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* **7**: 3 (2022).
Paper.

OTHER

77. **B.D. Fulcher**. Highly comparable time-series analysis in Nitime. *GigaScience Database* (2016).
[Link](#) .

PAPERS IN SUBMISSION

1. A.I. Luppi, L. Uhrig, J. Tasserie, G. Shafiei, K. Muta, J. Hata, H. Okano, D. Golkowski, A. Ranft, R. Ilg, D. Jordan, S. Gini, Z.-Q. Liu, Y. Yee, C.M. Signorelli, R. Cofre, A. Destexhe, D.K. Menon, E.A. Stamatakis, C.W. Connor, A. Gozzi, **B.D. Fulcher**, B. Jarraya, B. Misic. Comprehensive profiling of anaesthetised brain dynamics across phylogeny. [bioRxiv preprint](#) .
2. A.G. Bryant, A. Jha, S. Agarwal, P. Cahill, B. Lam, S.G. Oldham, A. Arnatkeviciute, A. Fornito, **B.D. Fulcher**. Benchmarking overlapping community detection methods for applications in human connectomics. [bioRxiv preprint](#) .
3. J.Y. Hansen, A.I. Luppi, Z. Qiu, S. Gini, **B.D. Fulcher**, A. Gozzi, S.G.N. Grant, B. Misic. Synaptome architecture shapes regional dynamics in the mouse brain. [bioRxiv preprint](#) .
4. J.C. Pang, K.M. Aquino, M. Oldehinkel, P.A. Robinson, **B.D. Fulcher**, M. Breakspear, A. Fornito. Reply to: Eigenmodes of the brain: revisiting connectomics and geometry. [bioRxiv preprint](#) .
5. I. Alam, B. Harris, P. Cahill, O. Cliff, M. Markicevic, V. Zerbi, **B.D. Fulcher**. Canonical time-series features for characterizing biologically informative dynamical patterns in fMRI. [bioRxiv preprint](#) .
6. E.J. Müller, B.R. Munn, G. Baracchini, **B.D. Fulcher**, V. Medel, M.J. Redinbaugh, Y.B. Saalman, B.W. Brunton, S.L. Brunton, J.M. Shine. Thalamic Control Over Laminar Cortical Dynamics Across Conscious States. [bioRxiv preprint](#) .

7. F. Baroni, **B.D. Fulcher**. Synchrony, oscillations, and phase relationships in collective neuronal activity: a highly comparative overview of methods. [bioRxiv preprint](#) .
8. A. Nguyen, O. McMullin, J.T. Lizier, **B.D. Fulcher**. A feature-based information-theoretic approach for detecting interpretable, long-timescale pairwise interactions from time series. [arXiv preprint](#) .
9. N.W. Bailey, **B.D. Fulcher**, M. Arns, P.B. Fitzgerald, B.M. Fitzgibbon, H. van Dijk. Prediction of response to transcranial magnetic stimulation treatment for depression using electroencephalography and statistical learning methods, including an out-of-sample validation. [medRxiv preprint](#) .
10. J.C. Pang, K.M. Aquino, M. Oldehinkel, P.A. Robinson, **B.D. Fulcher**, M. Breakspear, A. Fornito. Reply to: Commentary on Pang et al. (2023) Nature. [bioRxiv preprint](#) .
11. A. Leung*, A. Mahmoud*, R. Jeans, **B.D. Fulcher**, B. van Swinderen, N. Tsuchiya. Towards blinded classification of loss of consciousness: distinguishing wakefulness from general anesthesia and sleep in flies using a massive library of univariate time series analyses. [PsyArXiv preprint](#) .
12. T. Henderson and **B.D. Fulcher**. Feature-based time-series analysis in R using the `theft` package. [arXiv preprint](#) .

CONFERENCE/WORKSHOP PROCEEDINGS

1. D. Li, J. Murray, Q. Gu, **B.D. Fulcher**, V. Zerbi. Noradrenergic neuromodulation of spatiotemporal dynamics in a large-scale model of mouse cortex. *Cosyne* (2021).
2. O.M. Cliff, M. Li, D. Hernaus, L. Scholtens, E. Müller, B. Munn, G. Wainstein, **B.D. Fulcher**, J. Lizier, J.M. Shine. Modulation of the hierarchical gradient of cognitive information processing dynamics during rest and task. *CNS* (2020).
3. S. Oldham, **B.D. Fulcher**, K. Aquino, A. Arnatkevičiūtė, R. Shishegar, A. Fornito. A Spatial Developmental Generative Model of Human Brain Structural Connectivity. *CNS* (2020).
4. U. bin Waheed, A. Afify, M. Fehler, **B.D. Fulcher**. Winning with Simple Models: Detecting Earthquakes in Groningen, the Netherlands. *82nd EAGE Conference and Exhibition* 1–5 (2020). [Link. Preprint](#) .
5. A. Arnatkevičiūtė, **B.D. Fulcher**, A. Fornito. Methodological considerations in relating brain-wide transcriptomic and neuroimaging data. *OHBM* (2018).
6. L. Parkes, **B.D. Fulcher**, M. Yücel, A. Fornito. Comprehensive comparison of head motion correction strategies in resting-state functional magnetic resonance imaging. *International Symposium on Biomedical Imaging (ISBI'17)*, Melbourne, Australia (2017).
7. A. Arnatkevičiūtė, **B.D. Fulcher**, A. Fornito. Hub connectivity and gene expression in a neuronal connectome. *International Symposium on Biomedical Imaging (ISBI'17)*, Melbourne, Australia (2017).

CONFERENCE ORGANIZATION, EDITORIAL POSITIONS, AND SCIENTIFIC INITIATIVES

- 2022** Workshop organizer: ‘*Highly comparative analysis of neural dynamics*’ and Tutorial organizer: ‘*Characterizing neural dynamics using highly comparative time-series analysis*’ for the *31st Annual Computational Neuroscience Meeting (CNS2022)*, Melbourne, Australia.
- 2021** Workshop organizer (with Andreas Kempa-Liehr): *Systematic Feature Engineering for Time-Series Data Mining* for the *21st IEEE International Conference on Data Mining*, Auckland, New Zealand.
- 2021–** Review Editor for *Frontiers in Computational Neuroscience*.
- 2020** Local Organizing Committee for *Neuroinformatics 2020* (Seattle, USA).
- 2019** Local Organizing Committee for the *Poladian Project*, an international festival of interdisciplinary research, The University of Sydney.
- 2018** Local Organizing Committee for the *11th Australasian Workshop on Neuro-Engineering and Computational Neuroscience, NeuroEng 2018: A 3-day conference* (The University of Sydney).
- 2018** Launched a new interactive website, www.comp-engine.org, that allows users to upload their own data to contribute towards a self-organizing, living library of time-series data (2018). Extends an online collaborative scientific platform for time-series analysis that I developed in 2013, opening up years of work to the scientific community, which involved collecting and synthesizing tens of thousands of time series, and thousands of existing and newly-developed methods for measuring structure in time series. Over 66 000 views have been recorded since launching the website in February 2014.

AWARDS

- 2023** Selby Research Award 2023, Selby Scientific Foundation.
- 2023** Ranked in top 2% of scientists globally on 2022 publication metrics in the [Elsevier–Stanford–Scopus](#) citation evaluations.
- 2022** Ranked in top 2% of scientists globally on 2021 publication metrics in the [Elsevier–Stanford–Scopus](#) citation evaluations.
- 2021** Physics Teaching Award: Best Lecturer (voted by Students): Semester 1, 2021.
- 2020** Early Career Teaching Award (with Alessandro Tuniz), Faculty of Science, The University of Sydney.
- 2017** Australian representative for 9th Annual HOPE Meeting with Nobel Laureates (one of six Australians; Tokyo).
- 2014** 2nd place in Melbourne-based medical hackathon *HealthHack* for our entry, *GIRRROR: Tracking your emotions and gambling behavior*.
- 2011** *Nicholas Kurti Prize* for distinguished work as third year postgraduate student in Condensed Matter Physics, Department of Physics, University of Oxford.
- 2010** *David Ryan Prize* for distinguished work by a second year research student in Condensed Matter Physics, Department of Physics, University of Oxford.
- 2008** First Prize in the Poster Competition, Imperial College London, Institute of Systems and Synthetic Biology: Autumn Symposium.

- 2008** *Commonwealth Scholarship* to read for a D.Phil. at the University of Oxford.
- 2008** *Oxford Australia Scholarship* to read for a D.Phil. at the University of Oxford.
- 2008** *Science Centenary Fund Scholarship* for the highest ranked student over four years who proceeds to a postgraduate research degree in the Faculty of Science, University of Sydney.

RESEARCH SUPERVISION

POSTDOCTORAL SUPERVISION

- 2020–2022** Oliver Cliff, School of Physics, The University of Sydney.

PRIMARY PHD AND MPhil SUPERVISION

- 2023–** Kieran Owens, School of Physics, The University of Sydney.
- 2022–** Rishikesan Maran, School of Physics, The University of Sydney.
- 2022–2024** Mai Nguyen (MPhil), School of Physics, The University of Sydney.
- 2022–** Annie Bryant, School of Physics, The University of Sydney.
- 2021–** Trent Henderson, School of Physics, The University of Sydney.

PHD CO-SUPERVISION

- 2024–** Jiani Zhang (co-supervised with David Martinez Martin), School of Biomedical Engineering, The University of Sydney.
- 2022–** Brendan Harris (co-supervised with Pulin Gong), School of Physics, The University of Sydney.
- 2016–2020** Stuart Oldham (co-supervised with Alex Fornito), School of Psychological Sciences, Monash University.
- 2016–2020** External associate supervisor of Sarab Sethi (co-supervised with Nick Jones), Department of Mathematics, Imperial College London, UK.
- 2016–2020** External associate supervisor of Carl Lubba (co-supervised with Nick Jones), Department of Mathematics, Imperial College London, UK.
- 2015–2019** Linden Parkes (co-supervised with Alex Fornito and Murat Yücel), School of Psychological Sciences, Monash University.
- 2015–2019** Aurina Arnatkevičiūtė (co-supervised with Alex Fornito), School of Psychological Sciences, Monash University.
- 2015–2018** Elizabeth Seabrook (co-supervised with Nikki Rickard and Peggy Kern), School of Psychological Sciences, Monash University.
- 2014–2016** Simonne Cohen (co-supervised with Kim Cornish, Russell Conduit, Steven Lockley, Shanthakumar Rajaratnam), School of Psychological Sciences, Monash University.

HONOURS SUPERVISION

- 2024** Angus Rutherford (cosupervisor, with Sahand Mahmoodian), School of Physics, The University of Sydney.
- 2022-23** Joshua Moore, School of Physics, The University of Sydney.
- 2022-23** Muzheng Tan, School of Physics, The University of Sydney.
- 2021** Xavier Morris, School of Physics, The University of Sydney.
- 2021** Brendan Harris, School of Physics, The University of Sydney.
- 2020** Pok Him Siu, School of Physics, The University of Sydney.
- 2020** Eloisa Ana Perez-Bennetts, School of Physics, The University of Sydney.
- 2017** John Fallon, School of Psychological Sciences, Monash University.
- 2015** Patricia Tran (with Alex Fornito), School of Psychological Sciences, Monash University.
- 2015** Stuart Oldham (with Alex Fornito), School of Psychological Sciences, Monash University.

VISITING RESEARCH STUDENT SUPERVISION

- 2022-23** Zilu Cao (PhD student, Northwestern Polytechnical University, China).
- 2021** Marija Markicevic (PhD student, ETH, Switzerland).
- 2018** Sarab Sethi (PhD student, Imperial College London).
- 2018** Gladys Hoi Yan Lau (The University of Hong Kong).
- 2018** Aditi Jha (IIT Delhi, India).

UNDERGRADUATE SUPERVISION

- 2024** Physics 3rd-Year Interdisciplinary Special Project (w/ Kieran Owens): Lincoln Bourke and Max Sun.
- 2023** Physics 1st-Year Special Studies Project (w/ Annie Bryant): Oliver Sacks and Taj Astill.
- 2022** Physics 2nd-Year Special Studies Project (w/ Annie Bryant): Amy Shi, Grace Agostino, Hans Juttton, Jason Wang.
- 2021** Three Dalyell 3rd-Year Projects (separately): Pavle Cajic, Nada Salama, and Steven Wu.
- 2021** Physics 3rd-Year Interdisciplinary Special Project: Matthew Turner, Ben Braham, Hamish Sullivan, and Pranav Alavandi (with Shelley Wickham, Mac Shine, and Stuart Fraser).
- 2021** Google Summer of Code: Diptanshu Mittal: *A Django Platform for comparing scientific methods for analyzing neural time series analysis methods.*
- 2020** Physics 3rd-Year Interdisciplinary Special Project: Pavle Cajic and Dominic Agius (with Oliver Cliff, Mac Shine, and Joe Lizier).
- 2020** Physics SSP project: Steven Wu, Yifan Chen.
- 2020** Physics SSP project: Judd Katz, Leo Brodsky-Grey, Joska Steinbusch.

- 2020** Dalyell 3rd-Year Project: Brendan Harris. The University of Sydney.
- 2020** Two Google Summer of Code Projects: Imran Alam and Salman Khan.
- 2020** Denison Scholarship students: Oscar McMullin, Zhaioxi Cao, Preethom Pal, The University of Sydney.
- 2019** SSP students Brendan Harris, Cory Aitchison, and Chloe Beydoun, The University of Sydney.
- 2019** Denison Scholarship student Adithya Vignaraja, The University of Sydney.
- 2018** SSP students Brendan Harris and Xavier Morris (with Leonardo Gollo), The University of Sydney.
- 2014** Winter scholarship students Rannee Lee and Brandon Lim (with Alex Fornito), Monash University.
- 2013** Summer student, Krishna Vysyaraju, in the project *Highly comparative feature-based inference* (with Nick Jones), Department of Mathematics, Imperial College London, UK.
- 2011** Summer student, Alex Gibberd, in the project *Pre-processing methods for predicting epileptic seizures* (with Nick Jones), Department of Physics, University of Oxford, UK.
- 2010** Fourth year M.Phil. Physics student Oliver Britton in project *Structure in symbolic strings* (with Nick Jones), Department of Physics, University of Oxford, UK.

INVITED TALKS & PRESENTATIONS

Conferences and Workshops

- Nov 2024** Maths in the Brain and OHBM Australia Joint Workshop, The University of Melbourne: *Tracking near-critical dynamics from noisy neural signals.*
- Feb 2024** 4th Nobel Turing Challenge Initiative Workshop, Tokyo, Japan: *Extracting human understanding via mass algorithmic comparison.*
- July 2023** Computational Neuroscience Academy 2023, Jagiellonian University, Krakow, Poland: *Highly comparative time-series analysis tutorial.* [YouTube Live Stream.](#)
- June 2023** Japanese Computational Neurology Seminar Series, Hiroshima University, Japan: *The brain as a complex dynamical system.* [Slides](#) , [AI-generated talk summary.](#)
- Dec 2021** NIH Chronomedicine Webinar Series on “Circadian & Dynamics Brain Connectome.”: *How do structural connections shape local BOLD dynamics?.*
- June 2021** CNS (Online). [Software Showcase: Tools for Characterizing Neural Dynamics using Feature-Based Time-Series Analysis.](#)
- June 2021** NIMH Advanced Statistical Methods and Dynamic Data Visualizations for Mental Health Studies: ‘*Visualizing and understanding complex neural time series*’. [Link.](#)
- July 2020** CNS (Online): ‘*Characterizing neural dynamics using highly comparative time-series analysis*’. [Slides](#) , [YouTube](#) .
- May 2020** OHBM Australia: The Reproducibility Crisis Webinar: ‘*A practical guide to working reproducibly*’. [Slides](#) , [YouTube](#) .

- Dec 2019** CIBF Annual Science meeting, Adelaide Convention Centre, Australia: *‘Multimodal gradients across mouse cortex and their human correspondence’*.
- Nov 2019** NeuroEng 2019, Adelaide, Australia: *‘Spatial embedding of gene transcriptional gradients through brain development’*.
- Nov 2019** WOMBAT, a two-day conference on high-dimensional data analytics, Monash University, Australia: *‘Inferring low-dimensional parametric variation underlying time-series datasets’*. [Slides](#) .
- Oct 2019** Organization for Human Brain Mapping Australian Chapter Annual Scientific Meeting, University of Newcastle, Australia: *‘Measuring and interpreting transcriptional gradients in mouse and human’*.
- July 2019** IMS Invited Session: ‘Complex Time Series Analysis’, Joint Statistical Meeting (JSM), Denver, Colorado: *‘Highly comparative time-series analysis as statistical learning across a massive interdisciplinary feature library’*. [Slides](#) .
- June 2019** Organization for Human Brain Mapping (OHBM) 2019, Rome, Italy. Imaging genetics oral session: *‘Multimodal gradients across mouse cortex and their human correspondence’*. Symposium: *‘The transcriptomics of brain function: from circuitry and networks through psychiatric illness’*.
- March 2019** Whistler Summer Workshop on Brain Functional Organization, Connectivity, and Behavior, Noosa, Australia: *‘Multimodal gradients of the mouse cortex and their human correspondence’*. [Slides](#) .
- Feb 2018** NII Shonan Meeting *Analysing large collections of time series*. Shonan Village, Japan: *‘Feature-based time-series analysis’*.
- March 2017** Connectomics Keystone Symposium, Santa Fe, New Mexico, US: *‘Structural connectome topology relates to regional BOLD signal dynamics’*.
- Nov 2016** NeuroEng, Brisbane, Australia: *‘Structural connectome topology relates to regional BOLD signal dynamics in the mouse brain’*.
- Nov 2016** Workshop on Rodent Neuroscience, Suzhou, China: *‘Gene expression, axonal connectivity, and resting state dynamics in the mouse’*.
- July 2016** 25th Annual Computational Neuroscience Meeting (Connectome: Structure and large-scale dynamics workshop), Jeju Island, South Korea: *‘Gene expression and neural activity in the connectome’*.
- May 2016** Australia Node Representative at Advances in Neuroinformatics IV. AINI 2016 and International Neuroinformatics Coordinating Facility (INCF) Nodes Workshop Abstract: Oral Session IV-1, RIKEN, Saitama, Japan: *‘Brain connectivity and dynamics: Highly comparative time-series analysis of neuroscience data, and gene expression patterns of brain connectivity’*. DOI: 10.14931/aini2016.osiv.1
- July 2013** Workshop on Biological Dynamics, Department of Mathematics, University of Surrey, UK: *‘Highly comparative time-series analysis for biological signal processing’*.
- Aug 2012** 34th Annual International Conference of the IEEE EMBS, San Diego, USA: *‘Highly comparative fetal heart rate analysis’*.

March 2012 Royal Society satellite meeting: Signal processing for the physical sciences, The Kavli Royal Society International Centre, UK: *‘Highly comparative time-series analysis’*.

Local Presentations (within Institutions/Research Groups)

- Nov 2024** Complex Systems Workshop 2024, The University of Sydney: *Tracking the Distance to Criticality in Systems with Unknown Noise* [Webpage](#).
- Oct 2024** Seminar on Advances in Theoretical Frameworks for Neural Dynamics Analysis, The University of Tokyo, Japan: *Quantifying non-stationary dynamical structure in complex neural systems* [Webpage](#).
- Aug 2024** John Curtin School of Medical Research Director’s Seminar, ANU, Canberra, Australia: *The brain as a complex dynamical system* [Webpage](#).
- Oct 2023** RIKEN Brain Image Analysis Unit: *Doing systems neuroscience with transcriptomic atlas data*.
- Oct 2023** Quantum Photonics ClubHouse (*online*): *Harmonizing scientific methods to understand complex dynamics*.
- July 2023** Chinese Open Science Network (COSN) (*online*): *Quantifying complex dynamical systems*.
- Mar 2023** Advanced Telecommunications Research Institute International, and RIKEN Center for Advanced Intelligence Project, Kyoto, Japan: *Quantifying complex dynamical systems and Opportunities for Incorporating Brain-Atlas Datasets into Whole-Brain Models*.
- Nov 2022** Earthbyte Seminar Series, School of Geosciences, The University of Sydney: *Quantifying patterns in time series*.
- Oct 2022** MIIT Key Laboratory of Dynamics and Control of Complex Systems, Northwestern Polytechnical University, Xi’an, China: *Extracting Dynamical Understanding from Neural-Mass Models*.
- July 2022** `sktime` dev days, London (and remote): *Feature-based time-series analysis: Reducing down a large, interdisciplinary literature*.
- May 2022** Business Analytics Seminar Series, The University of Sydney: *Highly comparative time-series analysis*.
- Nov 2021** Data Skeptic Podcast: *Comparing Time Series with hctsa*. [Link](#).
- Oct 2021** University of Auckland Statistics Departmental Seminar. *‘Highly comparative time-series analysis’*.
- July 2021** Data Skeptic Podcast: *Comp Engine*. [Link](#).
- August 2021** RMIT Data Analytics Seminar. *‘An introduction to working with transcriptomic atlas data’*.
- August 2021** Cambridge Seminar Series: Making Connections – Brains & Other Complex Systems. *‘Quantifying Brain Dynamics and Structure Across Scales’*. [Slides](#) .
- August 2020** QMNET, Melbourne University: *‘The need for interdisciplinary comparison when analyzing time series’*. [Slides](#) . [YouTube](#) .

- June 2020** Monash University BMM ECR Workshop: building CV. *‘What can open science do for your career?’*.
- Nov 2019** Bio-Engineering and Nanoscience Symposium (BEANS), The University of Sydney: *‘Opportunities for nanoscience in leveraging modern brain databases’*.
- Aug 2019** CIBF ECR Retreat, Canberra, Australia: *‘Skills for Early-Career Scientists’*. [Slides](#) .
- Feb 2019** Poladian Project, Sydney, Australia: *‘Using machine learning to enhance productive interdisciplinary exchange’*. [Slides](#) .
- Dec 2017** Complexity, Criticality and Computation (C³) International Biannual Symposium. Sydney, Australia: *‘Automating biomedical time-series analysis using massive feature extraction’*.
- March 2017** Weekly Seminar Series, The Florey, Melbourne, Australia: *‘Gene transcriptional signatures of structural connectivity in the mouse’*.
- Oct 2016** Med-X Research Institute, Shanghai Jiaotong University, China: *‘Gene expression, brain connectivity, and rs-fMRI dynamics in the mouse’*.
- Sept 2016** Centre of Excellence for the Dynamics of Language, University of Queensland, Australia: *‘Automated time-series phenotyping’*.
- Aug 2016** Global Ideas Labs: Mental health and technology, Monash University, Melbourne, Australia: *‘MICCN SurveyKit: Opening up app-based monitoring to researchers’*.
- Aug 2016** Melbourne Mobile Meetup, Melbourne, Australia: *‘The road to MICCN SurveyKit’*.
- Nov 2015** Paris School of Economics, Paris, France: *‘Highly comparative time-series analysis’*.
- Sept 2015** Invited Speaker at BioMelbourne Network’s BioBriefing at Carlton Connect Initiative, Melbourne, Australia: *‘Why Hack’*.
- Aug 2015** School of Mathematics and Statistics, University of Melbourne, Australia: *‘Highly comparative time-series analysis’*.
- June 2015** Research Institute of Molecular Pathology (IMP), Vienna, Austria: *‘A highly comparative time-series analysis engine’*.
- June 2014** Integrative Brain Function Workshop, Monash Brain Imaging Facility, Monash University, Melbourne, Australia: *‘Highly comparative time-series analysis for brain imaging’*.
- Feb 2014** Sleep and Circadian Medicine Laboratory, Monash University, Melbourne, Australia: *‘Physiologically based sleep modeling’*.
- June 2013** Biomathematics Seminar Series, Imperial College, London, UK: *‘Quantitative, physiologically-based sleep modeling’*.
- Oct 2011** Atmospheric, Oceanic & Planetary Physics Seminar, Department of Physics, University of Oxford, UK: *‘Highly comparative time-series analysis’*.
- Oct 2011** Applied Dynamical Systems Seminar, Department of Mathematics, University of Oxford, UK: *‘Highly comparative time-series analysis’*.
- May 2011** Complex Agent-Based Dynamic Networks (CABDyN) Complexity Centre seminar, Saïd Business School, University of Oxford, UK: *‘An engine for comparative time-series analysis’*.

- Nov 2010** Nonlinear Seminars, Department of Mathematics, University of Surrey, UK: '*Quantitative sleep modeling*'.
- April 2010** *Signals Day*, University of Oxford, UK: '*High-throughput time-series analysis*'.

TEACHING

- 2021–2022, 2024** PHYS3934: Advanced Statistical Mechanics Lecturer. School of Physics, The University of Sydney.
- 2021–2022, 2024** PHYS3034/PHYS3934: Computational Physics. Lecturer. School of Physics, The University of Sydney.
- 2018–2024** PHYS3888: Interdisciplinary Physics. Coordinator and Lecturer, The University of Sydney.
- 2019** Guest lecture: Characterizing empirical dynamics using *hctsa* (CSYS5040: Criticality in Dynamical Systems), The University of Sydney.
- 2018–2019** Guest lecture: Machine learning methods for data visualization for Information Visualization Design Studio (DECO3100), The University of Sydney.
- 2018** PHYS1001 Tutorial Supervisor, The University of Sydney.
- 2016–2017** Lecturer for Computational Neuroscience, School of Psychological Sciences, Monash University.
- 2010** Guest lecturer in Machine Learning for Systems Biology Doctoral Training Center, Oxford University, UK.
- 2008–2010** Lecturer, demonstrator, and co-developer of a two-day *Research in Mathematical Biology* course for MSc Biology students, Oxford University, UK.
- 2009** Demonstrator for the first year electromagnetism physics laboratory, Oxford University, UK.
- 2008** Postgraduate Teaching Fellow, School of Physics, The University of Sydney.
- 2007–2008** Supervisor and tutor for first year advanced physics tutorials and laboratories, School of Physics, The University of Sydney.
- 2004–2008** Demonstrator and presenter for the Kickstart Program, School of Physics, The University of Sydney.