

## **RICHARD F. BETZEL – CURRICULUM VITAE**

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### **RESEARCH INTERESTS**

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My research program focuses on characterizing connectomes—network maps of the anatomical and functional connections between neural elements—and the relationship of these features to large-scale brain dynamics as well as human behavior, disease, and cognition. A major component of this research involves complex network models and analysis using a diverse set of mathematical tools that includes elements of graph theory, information theory, and dynamical systems theory.

### **CONTACT**

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### **EDUCATION AND EMPLOYMENT**

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2018-Pres Assistant Professor in Psychological and Brain Sciences and Cognitive Science Program at Indiana University, Bloomington, IN  
2015-2018 Postdoctoral Researcher at University of Pennsylvania, Philadelphia, PA  
Postdoctoral Advisor: Prof. Danielle S. Bassett  
2012-2015 Dual Ph.D. in Psychological and Brain Sciences (Cognitive Neuroscience concentration) and Program in Cognitive Science at Indiana University, Bloomington, IN  
Dissertation: Age-related changes in human anatomical and functional brain networks.  
Research Advisor: Prof. Olaf Sporns  
2008-2010 Master of Science in Human Biomechanics at Indiana University, Bloomington, IN  
Research Advisor: Prof. Jesus Dapena  
2003-2007 Bachelor of Arts in Physics at Oberlin College, Oberlin, OH

### **HONORS AND AWARDS**

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2021 APS Rising Star  
2017 OHBM Merit Abstract Award  
2017 NIH Early Independence Award Finalist  
2016 Saltzman Award for Outstanding Recent PhD Graduate (IU PBS)  
2016 Outstanding Dissertation Award (IU Prog. Cog. Sci.)  
2016 OHBM Merit Abstract Award  
2015 Regeneron Prize Nominee (University Pennsylvania, SEAS)  
2015 J.R. Kantor Graduate Award (IU PBS)

2015 IGERT Poster Showcase voted 3<sup>rd</sup> Place (“Generative Models of Human Connectome”)  
2015 IGERT Travel Award to NetSci2015, Zaragoza, Spain  
2014 Departmental Commendation on Qualifying Examination (June 24, 2014).  
2014 IGERT Travel Award to Annual Meeting of OHBM, Honolulu, HA  
2014 IGERT Travel Award to Annual Meeting of SfN, Washington, DC  
2013 IGERT Travel Award to Cambridge University, Cambridge, UK  
2012-2015 National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) in “The Dynamics of Brain-Body-Environment Systems”  
2009-2010 Cooper Scholarship  
2008-2009 HPER Fellowship

#### PROFESSIONAL MEMBERSHIP

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2020-Pres American Psychological Society  
2015- Pres Network Science Society  
2014- Pres Organization for Human Brain Mapping  
2011- Pres The Society for Neuroscience

#### EDITORIAL BOARD

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2017 NetSci2017 Program Committee  
2017 - Pres Member, Editorial Board, “Neuroimage”  
2018 NetSci2018 Program Committee  
2018 Member, Editorial Board, “Network Neuroscience”

#### INTERNSHIPS

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2013 Cambridge University, Cambridge UK. Supervised by Prof. Edward Bullmore

#### PHD COMMITTEES

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##### Defended:

2022 Hadar Karmazyn Raz (Indiana University)  
2022 Federico Rocchi (Trento, Italy, external reviewer)  
2022 Ludovico Coletta (Trento, Italy, external reviewer)  
2021 Kimberly Nestor (Carnegie Mellon)  
2021 Yanyu Xiong (Indiana University)  
2021 Joshua Faskowitz (Indiana University)  
2021 Lucy Owen (Dartmouth)  
2020 Adam Weinberger (Georgetown)  
2020 Lindsey Kitchell (Indiana University)  
2020 Colleen Hughes (Indiana University)  
2019 Caio Seguin (University Melbourne, external reviewer)

##### In-progress:

Thomas Varley (Indiana University), Cindy Jiaxin Tu (WUSTL)

## SOFTWARE

Brain Connectivity Toolbox – Contributor (<https://sites.google.com/site/bctnet/>)

Lab Github Page – <https://github.com/brain-networks>

## AD HOC REVIEWER

Brain and Behavior, Brain Connectivity, Brain Structure and Function, Chaos, eLife, Experimental Brain Research, Frontiers in Neuroscience, GigaScience, Human Brain Mapping, The Journal of Complex Networks, The Journal of Neuroscience, IEEE Journal of Selected Topics in Signal Processing, Nature Communications, Nature Neuroscience, Neuroimage, Neurology, PLOS Computational Biology, PLOS ONE, Proceedings of the National Academy of Sciences USA, Psychophysiology, Scientific Reports, Biological Psychiatry, Brain Topography, Scientific Data, Cell Reports, PLOS Biology, Nature

## TEACHING EXPERIENCE

2022- COGS-Q320 (Indiana University): Computation in information and cognitive sciences  
2021- PSY-P657 (Indiana University) Topical Seminar: The Dynamic Brain  
2020- COGS-Q400 (Indiana University) Senior Seminar  
2019- PSY-P335 (Indiana University) Cognitive Psychology  
2018- PSY-P457 (Indiana University) Network Science in the Psychological, Cognitive, and Brain Sciences  
2018- COGS-Q733 (Indiana University) Cognitive Science Colloquium  
2016-2016 BE-566 (University of Pennsylvania) Network Neuroscience T.A. (student evaluation of 3.27; 3-4 considered “good” to “excellent”)  
2016-2016 BE-566 (University of Pennsylvania) Guest lecture (Topic: Generative models of the human connectome)  
2008-2012 HPER-P391 (Indiana University) Biomechanics laboratory sections during Fall, Spring, and Summer sessions

## POSTDOCTORAL SUPERVISION

2022- Joshua Faskowitz (IU)  
2018- Farnaz Zamani Esfahlani (IU)

## GRADUATE SUPERVISION

2020- Jacob Tanner  
2020- Haily Merritt  
2019- Victoria Klimaj  
2019- Youngheun Jo

## UNDERGRADUATE SUPERVISION

2019- Sarah Greenwell (IU)  
2019- Jonah Slack (IU)  
2019- Riya Patel (IU)  
2019-2020 Yiru Dong (IU) – Graduate student at Columbia University  
2019-2021 Mckenzie Mimms (IU)

- 2018-2021 Luis Nieves (IU)  
 2018-2021 Brock Glaser (IU)  
 2017- Vidula Kopli (Penn) – Learning rate is predicted by structure/function coupling: A graph signal processing study.  
 2016- Elena Wu-Yan (Penn) – Controllability measures across canonical graph models.  
 2016-2017 David White (Penn) – Modularity and optimal control.  
 2016-2017 Aditya Srivatsan (Penn) – Generative models of the human connectome in development.  
 2016-2017 Kanika Mohan (Penn) – Robust methods for dynamic community detection in neuroimaging data.  
 2014-2015 Jeffrey Rumschlag (IU/Graduate student at University of California, Riverside)  
 2014-2015 Jennifer Huang (IU)

## GRANTS

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### *Funded*

1. Dynamic approaches to understanding social cognitive aging: A social network neuroscience approach (NIH; PI Krendl, Saykin, **RF Betzel**)
2. NCS-FO: Edge-centric maps of functional brain network organization (NSF; PI: **RF Betzel**, Co-PIs: O Sporns, YY Ahn, A Mejia)
3. Advancing neuroscientific discovery and training by lowering the barrier of entry to network neuroscience via open science, cyberinfrastructure, and cloud computing (NIH NIBIB: PIs: **RF Betzel**, F Pestilli, DS Bassett, F De Vico Fallani)
4. Disentangling the roles of intrinsic and task-specific functional connectivity on age differences in memory (ICTSI; PI: A Krendl, **RF Betzel**)
5. Revealing the Impact of Gut Microbiome on Brain Network Dynamics Driving Mood (PennCHOP Microbiome Pilot and Feasibility Grant Program; PI: DS Bassett).
6. Network models of cognitive-linguistic performance and brain connectivity in chronic aphasia (IU Faculty Research Support Program: Seed Funding; PI: **RF Betzel**, BC Stark)
7. Network models of cognitive-linguistic performance and brain connectivity in chronic aphasia (ICTSI; PI: **RF Betzel**, BC Stark)

### *Submitted*

8. Mapping the functional network architecture of cerebral cortex with complex, naturalistic stimuli (James S. McDonnell Foundation; PI: **RF Betzel**).
9. Dynamic and inter-subject functional connectivity for phenotype discovery in autism spectrum disorder (Brain & Behavior Research Foundation; PI: **RF Betzel**).
10. A spectral graph theory framework for mapping structure-function relationships in health and disease (Klingenstein-Simons Award; PI: **RF Betzel**).
11. NCS-FO: Edge-centric maps of functional brain network organization and dynamics (NSF; PI: **RF Betzel**, O Sporns, YY Ahn, M Mejia).
12. Connectome engineering: Modeling the development and growth of human anatomical brain networks (NIH Early Independence Award, DP5; PI: **RF Betzel**)
13. Connectome engineering: generative models of large-scale human brain networks (Burroughs Wellcome Fund, Career Awards at the Scientific Interface)

14. NCS-FO: NSF-BSF Application: A control theoretic account of high-level cognition (NSF; PI RF Betzel).
15. Neuronal and network mechanisms of electrocortical stimulation (NIH; PI Slutzky, Co-PI Betzel).

PUBLICATIONS (Citation count = 7922, h-index = 41, i10-index = 65, \* = trainee, [Blue text indicates research performed after beginning faculty position](#))

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2022

1. [RF Betzel, E Chumin, F Zamani Esfahlani\\*, JC Tanner\\*, J Faskowitz\\* \(2022\). System-level high-amplitude co-fluctuations. \*bioRxiv\*.](#)
2. [LQ Uddin, RF Betzel, et al \(2022\). Controversies and current progress on large-scale brain network nomenclature from OHBM WHATNET: Workgroup for HArmonized Taxonomy of NETworks. OSF PREPRINTS.](#)
3. [RF Betzel, et al \(2022\). Multi-policy models of interregional communication in the human connectome. \*bioRxiv\*.](#)
4. [RF Betzel, et al \(2022\). Hierarchical organization of spontaneous co-fluctuations in densely-sampled individuals using fMRI. \*bioRxiv\*.](#)
5. [AC Krendl, RF Betzel \(2022\). Social Network Neuroscience. SOCIAL, COGNITIVE AND AFFECTIVE NEUROSCIENCE](#)
6. [ZQ Liu, B Vazquez-Rodriguez, RN Spreng, BC Bernhardt, RF Betzel, B Masic \(2022\). Time-resolved structure-function coupling in brain networks. COMMUNICATIONS BIOLOGY.](#)
7. [S Cutts, J Faskowitz\\*, RF Betzel, O Sporns \(2022\). Uncovering Individual Differences in Fine-Scale Dynamics of Functional Connectivity. CEREBRAL CORTEX.](#)
8. [S Idesis, J Faskowitz\\*, RF Betzel, M Corbetta, O Sporns, G Deco \(submitted\). Edge-centric analysis of stroke patients: An alternative approach for biomarkers of lesion recovery.](#)
9. [A Weinberger, R Cortes, RF Betzel, AE Green \(2022\). Exploring Functional Brain Network Modularity in Educational Contexts. \*bioRxiv\*.](#)
10. [F Zamani Esfahlani\\*, J Faskowitz\\*, J Slack\\*, B Masic, RF Betzel \(2022\). Local structure-function relationships in human brain networks across the human lifespan. NATURE COMMUNICATIONS.](#)
11. [M Grazia Puxeddu, J Faskowitz, O Sporns, L Astolfi, RF Betzel \(2022\). Multi-modal and multi-subject modular organization of human brain networks. BIORXIV.](#)
12. [J Chumin, J Faskowitz\\*, F Zamani Esfahlani\\*, Y Jo\\*, H Merritt\\*, J Tanner\\*, S Cutts, M Pope, O Sporns, RF Betzel \(2022\). Cortico-Subcortical Interactions in Overlapping Communities of Edge Functional Connectivity. NEUROIMAGE.](#)

13. **RF Betzel**, S Cutts, **S Greenwell\***, J Faskowitz, O Sporns (2022). [Individualized event structure drives individual differences in whole-brain functional connectivity.](#) NEUROIMAGE.
14. FV Farahani, W Karwowski, MD Esposito, **RF Betzel**, et al. (2022). [Diurnal variations of resting-state fMRI data: A graph-based analysis.](#) NEUROIMAGE.

2021

14. ZQ Liu, **RF Betzel**, B Masic (2021). [Benchmarking functional connectivity by the structure and geometry of the human brain.](#) BIORXIV.
15. **Y Jo\***, **F Zamani Esfahlani\***, J Faskowitz, E Chumin, O Sporns, **RF Betzel** (2021). [The diversity and multiplexity of edge communities within and between brain systems.](#) CELL REPORTS.
16. **S Greenwell\***, J Faskowitz, L Pritschet, T Santander, E Jacobs, **RF Betzel** (2021). [High-amplitude network co-fluctuations linked to variation in hormone concentrations over menstrual cycle.](#) BIORXIV.
17. **F Zamani Esfahlani\***, L Byrge, **JC Tanner**, O Sporns, DP Kennedy, **RF Betzel** (2021). [Edge-centric analysis of time-varying functional brain networks with applications in autism spectrum disorder.](#) BIORXIV.
18. **RF Betzel**, P Vertes (2021). [Organizing principles of the C. elegans contactome.](#) CELL SYSTEMS.
19. **F Zamani Esfahlani\***, **Y Jo\***, M Grazia Puxeddu, **H Merritt\***, **J Tanner\***, **D Greenwell\***, **R Patel\***, J Faskowitz, **RF Betzel** (2021). [Modularity maximization as a flexible and generic framework for brain network exploratory analysis.](#) NEUROIMAGE.
20. M Pope, M Fukushima, **RF Betzel**, O Sporns (2021). [Modular origins of high-amplitude co-fluctuations in fine-scale functional connectivity dynamics.](#) PNAS.
21. C Jiang, **RF Betzel**, Y He, XN Zuo (2021). [Toward Reliable Network Neuroscience for Mapping Individual Differences.](#) BIORXIV.
22. J Faskowitz, **RF Betzel**, O Sporns (2021). [Edges in Brain Networks: Contributions to Models of Structure and Function,](#) ARXIV.
23. **Y Jo\***, J Faskowitz, **F Zamani Esfahlani\***, O Sporns, **RF Betzel** (2021). [Subject identification using edge-centric functional connectivity.](#) NEUROIMAGE.
24. J Faskowitz, **J Tanner\***, B Masic, **RF Betzel** (2021). [An edge-centric model for harmonizing multi-relational network datasets.](#) BIORXIV.
25. HR Evensmoen, LM Rimol, AM Winkler, **RF Betzel**, TI Hansen, H Nili, AK Håberg (2021). [Allocentric representation in the human amygdala and ventral visual stream.](#) CELL REPORTS.
26. U Braun, A Harneit, G Pergola, T Menara, A Schaefer, **RF Betzel**, et al (2021). [Brain state stability during working memory is explained by network control theory,](#)

modulated by dopamine D1/D2 receptor function, and diminished in schizophrenia.  
NATURE COMMUNICATIONS.

27. O Sporns, J Faskowitz, S Teixeira, **RF Betzel** (2021). Dynamic expression of functional systems disclosed by fine-scale analysis of edge time series. NETWORK NEUROSCIENCE.

2020

28. **RF Betzel** (2020). Community detection in network neuroscience. ARXIV.

29. X Zhang, U Braun, A Harneit, Z Zang, L Geiger, **RF Betzel**, et al (2020). Generative network models identify biological mechanisms of altered structural brain connectivity in schizophrenia. NEUROIMAGE.

30. **RF Betzel** (2020). Network neuroscience and the connectomics revolution. (TO APPEAR IN "CONNECTOMIC DEEP BRAIN STIMULATION").

31. A Rajesh, **RF Betzel**, ... A Kramer (2020). Evaluating modularity benefits of an acting intervention: A Discriminant-Analysis Framework. (SUBMITTED).

32. M Cieslak, ... **RF Betzel** ... TD Satterthwaite (2020). QSIPrep: An integrative platform for preprocessing and reconstructing diffusion MRI. BIORXIV.

33. J Faskowitz, **F Zamani Esfahlani\***, **Y Jo\***, O Sporns, **RF Betzel** (2020). Edge-centric functional network representations of human cerebral cortex reveal overlapping system-level architecture. NATURE NEUROSCIENCE.

34. M Puxeddu, J Faskowitz, **RF Betzel**, et al (2020). The modular organization of brain cortical connectivity across the human lifespan. NEUROIMAGE.

35. **F Zamani Esfahlani\*^**, **Y Jo\*^**, J Faskowitz, D Kennedy, O Sporns, **RF Betzel** (2020). High-amplitude co-fluctuations in cortical activity drive resting-state functional connectivity. PNAS.

36. **F Zamani Esfahlani\***, M Bertolero, DS Bassett, **RF Betzel** (2020). Space-independent community and hub structure of functional brain networks. NEUROIMAGE.

37. Y Kenett^, **RF Betzel^**, RE Beaty (2020). Community structure of the creative brain at rest. NEUROIMAGE.

38. LE Suárez, **RF Betzel**, B Mišić (2020). Linking structure and function in macroscale brain networks. TRENDS IN COGNITIVE SCIENCES.

39. GL Baum, Z Cui, DR Roalf, R Ciric, **RF Betzel**, et al (2020). Development of structure-function coupling in human brain networks during youth. PNAS.

40. Z Cui, J Stiso, GL Baum, JZ Kim, DR Roalf, **RF Betzel**, et al. (2020). Optimization of Energy State Transition Trajectory Supports the Development of Executive Function During Youth. ELIFE.

41. **RF Betzel**, L Byrge, **F Zamani Esfahlani\***, DP Kennedy (2020). Temporal fluctuations in the brain's modular architecture during movie-watching.

42. **RF Betzel** (2020). [Organizing principles of whole-brain functional connectivity in zebrafish larvae.](#) NETWORK NEUROSCIENCE.

2019

43. C Hall, A Lord, **RF Betzel**, A Zalesky, G Radford-Smith, L Cocchi (2019). [Co-existence of network architectures supporting the human gut microbiome.](#) ISCIENCE.

44. **RF Betzel**, et al (2019). [The community structure of functional brain networks exhibits scale-specific patterns of variability across individuals and time.](#) NEUROIMAGE.

45. A Goulas, **RF Betzel**, & CC Hilgetag (2019). [Spatiotemporal ontogeny of brain wiring.](#) SCIENCE ADVANCES, 355016.

46. **RF Betzel**, et al (2019). [Distance-dependent consistency thresholds for generating group-representative structural brain networks.](#) NETWORK NEUROSCIENCE.

47. **RF Betzel**, et al (2019). [Inter-regional ECoG correlations predicted by communication dynamics, geometry, and correlated gene expression.](#) NATURE BIOMEDICAL ENGINEERING.

2018

48. DJ Lurie, D Kessler, DS Bassett, **RF Betzel**, et al. (2018). [On the nature of resting fMRI and time-varying functional connectivity.](#) PSYARXIV.

49. EJ Cornblath, A Ashourvan, JZ Kim, **RF Betzel**, et al. (2018). [Context-dependent architecture of brain state dynamics is explained by white matter connectivity and theories of network control.](#) BIORXIV.

50. P Reddy, **RF Betzel**, et al. (2018). [Genetic and Neuroanatomical Support for Functional Brain Network Dynamics in Epilepsy.](#) ARXIV.

51. CH Xia, Z Ma, R Ciric, S Gu, **RF Betzel**, et al. (2018). [Linked dimensions of psychopathology and connectivity in functional brain networks.](#) NATURE COMMUNICATIONS, 9(1), 3003.

52. **RF Betzel** & DS Bassett (2018). [Specificity and robustness of long-distance connections in weighted, interareal connectomes.](#) PNAS, 201720186.

53. B Misic, **RF Betzel**, et al (2018). [Network-based asymmetry of the human auditory system.](#) CEREBRAL CORTEX, 28(7), 2655-2664.

54. M Fukushima, **RF Betzel** et al (2018). [Structure–function relationships during segregated and integrated network states of human brain functional connectivity.](#) BRAIN STRUCTURE AND FUNCTION, 223(3), 1091-1106.

55. AE Sizemore, C Giusti, A Kahn, JM Vettel, **RF Betzel**, & DS Bassett (2018). [Cliques and cavities in the human connectome.](#) JOURNAL OF COMPUTATIONAL NEUROSCIENCE, 44(1), 115-145.



56. **RF Betzel** et al (2018). Diversity of meso-scale architecture in human and non-human connectomes. NATURE COMMUNICATIONS, 9(1), 346.
57. YN Kenett, JD Medaglia, RE Beaty, Q Chen, **RF Betzel** et al (2018). Driving the brain towards creativity and intelligence: A network control theory analysis. NEUROPSYCHOLOGIA.
58. U Braun, A Schaefer, **RF Betzel**, et al (2018). From maps to multi-dimensional network mechanisms of mental disorders. NEURON, 97(1), 14-31.
59. **RF Betzel**, et al (2018). Non-assortative community structure in resting and task-evoked functional brain networks. BIORXIV, 251827.

2017

60. JC Worrell, J Rumschlag, **RF Betzel**, et al (2017). Optimized connectome architecture for sensory-motor integration. NETWORK NEUROSCIENCE, 1(4), 415-430.
61. **RF Betzel** & DS Bassett (2017). Generative models for network neuroscience: Prospects and promise. JOURNAL OF THE ROYAL SOCIETY INTERFACE, 14(136), 20170623.
62. **RF Betzel** & DS Bassett (2017). Multi-scale brain networks. NEUROIMAGE, 160, 73-83.
63. M Fukushima, **RF Betzel**, et al (2017). Fluctuations between high-and low-modularity topology in time-resolved functional connectivity. NEUROIMAGE.
64. AN Khambhati, AE Sizemore, **RF Betzel**, DS Bassett (2017). Modeling and interpreting mesoscale network dynamics. NEUROIMAGE.
65. GL Baum, R Ciric, DR Roalf, **RF Betzel**, et al (2017). Modular segregation of structural brain networks supports the development of executive function in youth. CURRENT BIOLOGY, 27(11), 1561-1572.
66. **RF Betzel** et al (2017). Positive affect, surprise, and fatigue are correlates of network flexibility. SCIENTIFIC REPORTS, 7(1), 520.
67. S Gu, **RF Betzel** et al (2017). Optimal trajectories of brain state transitions. NEUROIMAGE, 148, 305-317.
68. **RF Betzel** et al (2017). The modular organization of human anatomical brain networks: Accounting for the cost of wiring. NETWORK NEUROSCIENCE, 1(1), 42-68.
69. E Wu-Yan, **RF Betzel**, et al. (2017). Benchmarking measures of network controllability on canonical graph models. JOURNAL OF NONLINEAR SCIENCE, 1-39.
70. XN Zuo, Y He, **RF Betzel**, et al. (2017). Human connectomics across the lifespan. TRENDS IN COGNITIVE SCIENCES, 21(1), 32-45.

2016

71. H Mohr, U Wolfensteller, **RF Betzel**, et al (2016). Integration and segregation of large-scale brain networks during short-term task automatization. NATURE COMMUNICATIONS, 7, 13217.
72. **RF Betzel** et al. (2016). Optimally controlling the human connectome: the role of network topology. SCIENTIFIC REPORTS, 6, 30770.
73. MG Mattar, **RF Betzel**, DS Bassett (2016). The flexible brain. BRAIN, 139(8), 2110-2112.
74. B Masic, **RF Betzel**, et al. (2016). Network-level structure-function relationships in human neocortex. CEREBRAL CORTEX, 26(7), 3285-3296.
75. **RF Betzel** et al (2016). Dynamic fluctuations coincide with periods of high and low modularity in rest-state functional brain networks. NEUROIMAGE, 127, 287-297.
76. O Sporns & **RF Betzel** (2016). Modular brain networks. ANNUAL REVIEW OF PSYCHOLOGY, 67, 613-640.
77. **RF Betzel**, et al. (2016). Generative models of the human connectome. NEUROIMAGE, 124, 1054-1064.

2015

78. **RF Betzel**, et al. (2015). Functional brain modules reconfigure at multiple scales across the human lifespan. ARXIV.
79. B Masic<sup>^</sup>, **RF Betzel**<sup>^</sup>, et al. (2015). Cooperative and competitive spreading dynamics on the human connectome. NEURON, 86(6), 1518-1529.

2014

80. B Masic, J Goni, **RF Betzel**, et al. (2014). A network convergence zone in the hippocampus. PLOS COMPUTATIONAL BIOLOGY, 10(12), e10033982.
81. **RF Betzel**, et al (2014). Changes in structural and functional connectivity among resting-state networks across the human lifespan. NEUROIMAGE, 102, 345.
82. A Avena-Koenigsberger, J Goni, **RF Betzel** (2014). Using Pareto optimality to explore the topology and dynamics of the human connectome. PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY, B, 369(1653), 20130530.
83. J Goni, MP van den Heuvel, A Avena-Koenigsberger, NV de Medizabal, **RF Betzel**, et al. (2014). Resting-brain functional connectivity predicted by analytic measures of network communication. PNAS, 111(2), 833-838.

2013

84. **RF Betzel**, et al. (2013). Multi-scale community organization of the human structural connectome and its relationship with resting-state functional connectivity. Network Science, 1(3), 353-373.

85. J Goni et al. (2013). Exploring the Morphospace of Communication Efficiency in Complex Networks, *PLoS ONE*, 8(3), e58070.

2012

86. **RF Betzel** et al (2012). Synchronization Dynamics and Evidence for a Repertoire of Network States in Resting EEG. *Frontiers in Computational Neuroscience*, 6, 74.

## PRESS

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1. Baum et al. (2017), National Public Radio.
2. Sizemore et al. (2016), MIT Technology review.
3. Mišić et al. (2015), Neuroscience News, Scientific Computing.

## POSTERS AND CONFERENCE PROCEEDINGS

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1. RF Betzel et al (October 2018). The community structure of functional brain networks exhibits scale-specific patterns of variability across individuals and time. Annual meeting of the Society for Neuroscience. San Diego, CA
2. RF Betzel et al (March 2018). Specificity and robustness of long-distance connections in weighted, inter-areal connectomes. Annual Meeting of Cognitive Neuroscience Society. Boston, MA
3. RF Betzel et al (October 2017). Stability of spontaneous, correlated activity in mouse auditory cortex. Annual meeting of the Society for Neuroscience. Washington DC
4. RF Betzel et al (June 2017). Diversity of connectome mesoscale organization. Annual meeting of Organization of Human Brain Mapping. Vancouver, Canada.
5. RF Betzel et al (June 2017). Inter-regional ECoG correlations predicted by communication dynamics, geometry, and correlated gene expression. Annual meeting of Network Science. Indianapolis, Indiana.
6. RF Betzel et al (October 2016). Optimally controlling the human connectome. Collaborative Research in Computational Neuroscience. Paris, France.
7. RF Betzel et al (November, 2016). Space independent communities in the human connectome. Annual meeting of the Society for Neuroscience. San Diego, CA.
8. A Sizemore et al (November, 2016). Functional role of topological cycles in the human structural connectome. Annual meeting of the Society for Neuroscience. San Diego, CA.
9. S Gu et al (November, 2016). Optimal Trajectories of Brain State Transitions. Annual meeting of the Society for Neuroscience. San Diego, CA.
10. M Fukushima (November, 2016). Optimal Trajectories of Brain State Transitions. Annual meeting of the Society for Neuroscience. San Diego, CA.
11. G Baum (November, 2016). Modular evolution of structural brain networks in adolescence supports executive function. Annual meeting of the Society for Neuroscience. San Diego, CA.
12. RF Betzel et al (June, 2016). Optimally controlling the human connectome. Annual meeting of the Organization for Human Brain Mapping. Geneva, Switzerland.

13. RF Betzel et al (October, 2015). Functional modules reconfigure at multiple scales across the human lifespan. Annual meeting of the Society for Neuroscience. Chicago, IL.
14. B Mišić et al (October, 2015). Multivariate structure-function relationships in human brain networks. Annual meeting of the Society for Neuroscience. Chicago, IL.
15. H Mohr et al (June, 2015). Large-scale integration and segregation of functional brain modules during rapid learning processes. Annual meeting of the Organization for Human Brain Mapping. Honolulu, HA.
16. RF Betzel et al (June, 2015). Generative models of the human connectome. Annual meeting of the Organization for Human Brain Mapping. Honolulu, HA.
17. B Mišić et al (June, 2015). Cooperative and competitive spreading on the human connectome. Annual meeting of the Organization for Human Brain Mapping. Honolulu, HA.
18. RF Betzel et al (October, 2014). Changes in structural and functional connectivity among resting-state networks across the human lifespan. Annual meeting of the Society for Neuroscience. Washington, DC.
19. RF Betzel et al (October, 2013). Multi-scale community organization in the human connectome and its relationship with functional connectivity. Annual meeting of the Society for Neuroscience, San Diego, CA.
20. A Avena-Koenigsberg et al (October, 2013). Using Pareto optimality to explore the topology and dynamics of the human connectome. Annual meeting of the Society for Neuroscience, San Diego, CA.
21. J Goñi et al (October, 2013). Resting brain functional connectivity predicted by analytic measures of network communication. The Indiana Neuroimaging Symposium, Bloomington, IN.
22. RF Betzel et al (May, 2013). Multi-scale community organization in the human connectome and its relationship with functional connectivity. IGERT Research Showcase, Bloomington, IN.
23. A Griffa et al (April, 2013). Group representative partitions of human brain structural networks. Annual meeting of the International Society for Magnetic Resonance in Medicine, Salt Lake City, UT.
24. J Goñi (November, 2012). Predicting resting-state functional connectivity by modeling random-walk processes on structural connectivity. Annual meeting of the Society for Neuroscience, New Orleans, LA.
25. RF Betzel (November, 2011). Recurrent functional network topologies reveal a finite dynamic repertoire in resting-state EEG. Annual meeting of the Society for Neuroscience, Washington, DC.
26. MA Erickson (September, 2011). Functional network organization of schizophrenia and healthy control participants in resting state EEG. Annual meeting for the Society for Research in Psychopathology, Boston, MA.

## INVITED TALKS

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1. Edge-centric connectomics (virtual talk, June 2022). Humboldt University (Humboldt, Germany).
2. Edge-centric connectomics (virtual talk, May 2022). Centro Interdipartimentale Mente/Cervello colloquium (Trento, IT).

3. Modeling structure-function coupling in brain networks (May 2022). Oxford Mathematical Modeling of Brains (Oxford, UK).
4. Edge-centric connectomics (virtual talk, March 2022). Neuropsychiatry seminar (McLean Hospital, Harvard Psychiatry)
5. Edge-centric connectomics (February 2022). Psychology colloquium (University of Michigan)
6. Edge-centric connectomics (virtual talk, October 2021). Feindel Brain and Mind Lecture Series (MNI, McGill).
7. Edge-centric connectomics (virtual talk, May 2021). Canadian Computational Neuroscience Spotlight.
8. Edge-centric connectomics (June 2021). Nonstandard Brain Image Analysis (OHBM Satellite)
9. Edge-centric connectomics (May 2021). Signal Processing in Neuroimaging Group Meeting
10. Edge-centric connectomics (virtual talk, February 2021). University of Texas, Austin.
11. Edge-centric connectomics (virtual talk, 2021). University of California, Santa Barbara.
12. Edge-centric connectomics (virtual talk, November 2020). University of New Mexico.
13. Multiscale modeling and analysis of structural and functional brain networks (Calgary, Alberta, Canada, September 2019). University of Calgary.
14. Advances in the analysis and modeling of structural and functional brain networks (Pasadena, CA, December 2019). CalTech.
15. Generative models of connectomes (Rome, Italy, June 2019). OHBM
16. Modularity in structural and functional brain networks (Rome, Italy, June 2019). OHBM.
17. Modeling of functional network architecture (Bloomington, IN, May 2019). Indiana University, EAR: How systems learn, change, and self-organize: Insights from network science.
18. Linking brain structure and function (Montreal, CA, May 2019). ISMRM.
19. Graph theory workshop (St. Louis, MO, May 2019). WUSTL.
20. Modeling of functional network architecture (Nashville, TN, April 2019). Vanderbilt University
21. Network Neuroscience (Bloomington, IN, March 2019). Indiana University (Guest lecture in COGS-Q101).
22. Computational Cognitive Neuroscience Breakout Session (Philadelphia, PA, September 2018). How can we incorporate connectivity data into neural network models?
23. Organization for Human Brain Mapping graph theory educational course (Singapore, June 2018). Modularity in structural and functional brain networks: concepts and guidelines.
24. RF Betzel (March 2018). Reconfiguration of functional and structural brain networks over the human lifespan. Imaging: Innovations to Enhance Aging Research. National Institutes of Health. Bethesda, MD.

25. Organization for Human Brain Mapping 2017 – Session on Connectivity Methods (Vancouver, Canada) – Diversity of meso-scale architecture in the human and non-human connectome
26. NetSci 2017 (Indianapolis, IN) (June 21, 2017) – ECoG functional connectivity predicted by communication dynamics, geometry, and correlated gene expression
27. Social Affective Neuroscience Annual Meeting (Los Angeles, CA), (March 18, 2017) – Positive affect, surprise, and fatigue are correlates of network flexibility.
28. SIAM Conference on Computational Science and Engineering (Atlanta, GA), (March 1, 2017) – Multi-layer, Time-varying Brain Networks: Community Structure and Network Flexibility
29. Yale MRRC Colloquium Series (New Haven, CT), (February 8, 2017) – Brain network dynamics: Flexibility and Control.
30. Institut du Cerveau et de la Moelle Epinière (Paris, France), (October 27, 2016) – The modular organization of human anatomical brain networks: Accounting for the cost of wiring
31. Collaborative Research in Computational Neuroscience (CRCNS) (Paris, France), (October 24, 2016) – Optimally controlling the human connectome: the role of network topology.
32. Resting State Connectivity Conference – Satellite course on Brain Network Methods (Vienna, Austria) (Sept. 24) – Optimal control and multilayer analysis of brain network data.
33. Organization for Human Brain Mapping 2016 – Graph theory educational course (Geneva, Switzerland) (June 26, 2016) – Generative Models of Brain Networks.
34. Organization for Human Brain Mapping 2016 – Graph theory educational course (Geneva, Switzerland) (June 26, 2016) – Multi-layer and dynamic networks.
35. Organization for Human Brain Mapping 2016 – Session on Predictive and Statistical Modeling (Geneva, Switzerland) (June 28, 2016) – Optimally controlling the human connectome: the role of network topology.
36. NetSci-LASH: Network Science in Languages, Arts, Sciences & Humanities (Kansas University, Lawrence, KS) (April 1, 2016) – Networks in the Neural Sciences.
37. Annual meeting of the Society for Neuroscience (Nanosymposium – Human Brain Networks) (October 23, 2015) - Functional modules reconfigure at multiple scales across the human lifespan.
38. NetSci 2015 (Brain networks satellite symposium) (Zaragoza, Spain) (June 1, 2015) – Generative models of the human connectome.
39. Indiana University, guest lecture (Networks of the Brain undergraduate course, taught by Olaf Sporns) (March 10, 2015) – Changes in structural and functional connectivity among resting-state networks across the human brain.
40. University of Pennsylvania Complex Systems Seminar (March 6, 2015) – Generative models of the human connectome.
41. University of Cambridge Brain Mapping Unit Networks Meeting (July 16, 2013) – Relating structure and function: Diffusion and modularity in the human connectome.