

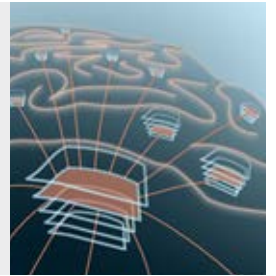
Institute of Neuroscience and Medicine (INM-6)

Computational and Systems Neuroscience

Institute for Advanced Simulation (IAS-6)

Theoretical Neuroscience

JARA Brain Institute I (JBI-1)



Congratulations to recent doctoral graduates



Yansong Chua

Modeling the calcium spike and its role in network computation

Yansong investigates the network effects of dendritic spikes in biologically realistic neural network models.



Dmytro Grytskyy

Theory of mutual interaction of activity and connectivity in plastic neural networks

In his defense Dmytro uses analytical theory to explore the interplay between the activity and connectivity of neuronal networks.



Hannah Bos

Connectivity structure induced dynamics and correlations in spiking neural networks

In her defense, Hannah presented a mathematical framework for determining the influence of connectivity patterns on frequency-resolved network activity.

Peer Reviewed Papers

Bos H, Diesmann M, Helias M.

Identifying Anatomical Origins of Coexisting Oscillations in the Cortical Microcircuit.

PLoS Comput Biol.

DOI:10.1371/journal.pcbi.1005132

Dahmen D, Bos H, Helias M.

Correlated Fluctuations in Strongly Coupled Binary Networks Beyond Equilibrium.

Physical Review X, 6:031024.

DOI:10.1103/PhysRevX.6.031024

Pfeil T, Jordan J, Tetzlaff T, Grübl A, Schemmel J, Diesmann M and Meier K (2016)

Effect of Heterogeneity on Decorrelation Mechanisms in Spiking Neural Networks: A Neuromorphic-Hardware Study.

Physical Review X, 6:021023.

DOI:10.1103/PhysRevX.6.021023

Hagen E, Dahmen D, Stavrinou M L, Lindén H, Tetzlaff T, van Albada S J, Grün S, Diesmann M and Einevoll G T

Hybrid Scheme for Modeling Local Field Potentials from Point-Neuron Networks

Cereb Cortex 2016 : bhw237v1-36.

DOI:10.1093/cercor/bhw237

Bibbona E, Sacerdote L, Torre E.

A copula-Based Method to Build Diffusion Models with Prescribed Marginal and Serial dependence.

Methodology and computing in applied probability 18, 765 (2016).

DOI:10.1007/s11009-016-9487-6

Bouchard K E, Aimone J B, Chun M, Dean T, Denker M, Diesmann M, Donofrio D D, Frank L M, Kasthuri N, Koch C, Ruebel O, Simon H D, Sommer F T, Prabhat

High-Performance Computing in Neuroscience for Data-Driven Discovery, Integration, and Dissemination
Neuron, Volume 92, Issue 3, 2 November 2016, Pages 628-631, ISSN 0896-6273,

<http://dx.doi.org/10.1016/j.neuron.2016.10.035>.

<http://www.sciencedirect.com/science/article/pii/S0896627316307851>

Maksimov A, van Albada S J, Diesmann M

[Re] Cellular and network mechanisms of slow oscillatory activity (<1 Hz) and wave propagations in a cortical network model
ReScience, volume 2, issue 1, 2016

<https://github.com/ReScience-Archives/Maksimov-Albada-Diesmann-2016/raw/master/article/maksimov-albada-diesmann-2016.pdf>

In Book

Hahne J, Helias M, Kunkel S, Igarashi J, Kitayama I, Wylie B, Bolten M, Frommer A and Diesmann M

Including Gap Junctions into Distributed Neuronal Network Simulations
Amunts, K., Grandinetti, L., Lippert, T. & Petkov, N. (ed.)

Brain-Inspired Computing: Second International Workshop, Brain-Comp 2015, Cetraro, Italy, July 6-10, 2015, Revised Selected Papers
Springer International Publishing, 2016, pp. 43-57

DOI: 10.1007/978-3-319-50862-7_4

Denker M, Grün S (2016)

Designing Workflows for the Reproducible Analysis of Electrophysiological Data.

Amunts, K., Grandinetti, L., Lippert, T. & Petkov, N. (ed.)

Brain-Inspired Computing: Second International Workshop, Brain-Comp 2015, Cetraro, Italy, July 6-10, 2015, Revised Selected Papers
Springer International Publishing, 2016, pp. 58-72)

DOI: 10.1007/978-3-319-50862-7_5

Preprint

Plotnikov D, Eppler J M, Blundell I, Rumpel B, Morrison A

NESTML_ A modeling language for spiking neurons

Submitted to ArXiv (<https://arxiv.org/abs/1606.02882>)

Submitted Paper

Muller E, van Albada S J, Kim J-W, Robinson P A

Unified neural field theory of brain dynamics in Parkinson's disease and generalized epilepsies

Journal of Theoretical Biology

Other

h5py_wrapper 1.0.1 released

Jakob Jordan and Maximilian Schmidt released the first major release of the h5py_wrapper - a wrapper to conveniently store nested python dictionaries in hdf5 files.

h5py_wrapper is now on pypi:

<https://pypi.python.org/pypi/h5py-wrapper>

Activities

Planned: NEST User+Developer Conference 2017



The "NEST user workshop 2016" (3-4 November 2016) was very successful. More than 60 people networked very well. Following the success, for 2017 a bigger NEST User+Developer Conference is planned.