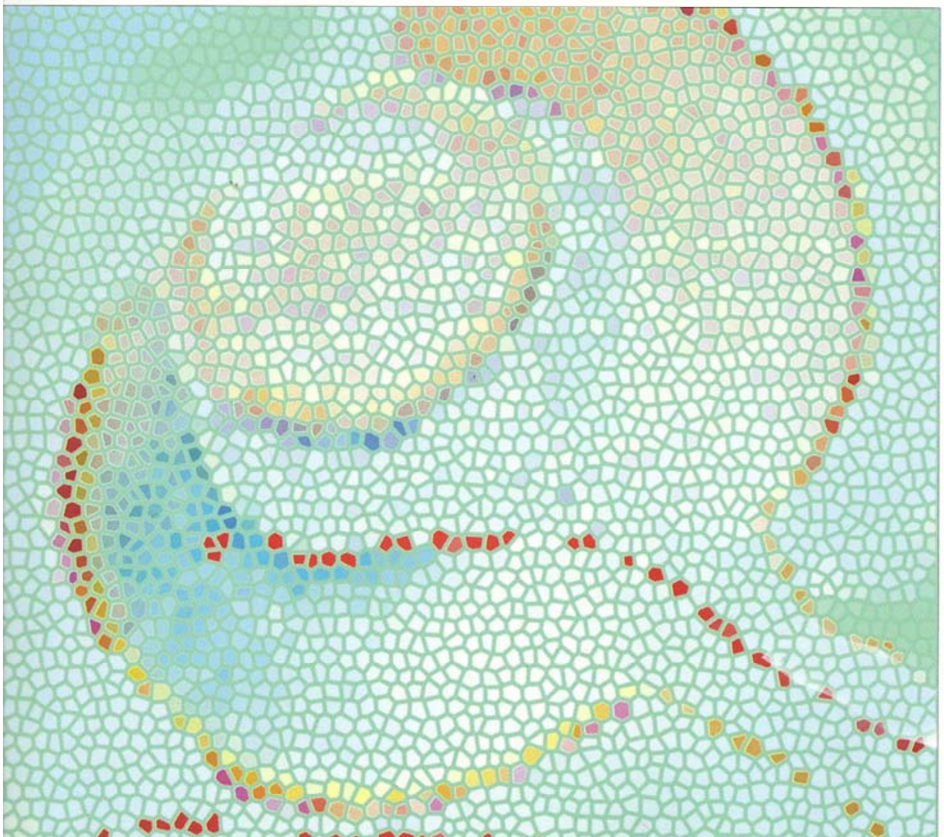
Sunday

Scientific Session Listings 100–272



NEUROSCIENCE
2014

WASHINGTON, DC | November 15–19

SfN Society *for* Neuroscience

11:00 C55 **129.12** Elfn1 recruits presynaptic mGluR7 in trans and its loss cause epilepsy, hyperactivity, and attention deficits. J. ARUGA*; N. H. TOMIOKA; H. YASUDA; H. MIYAMOTO. *Nagasaki Univ. Sch. of Med., RIKEN BSI, Gunma Univ.*

8:00 C56 **129.13** Monosynaptic inhibitory transmission between layer 2 GABA-ergic non-fast spiking interneurons *in vivo*. A. L. DORRN*; J. F. A. POULET. *Max-Delbrueck-Center For Mol. Med., NeuroCure - Neurosci. Res. Center, Charité-Universitaetsmedizin.*

9:00 C57 **129.14** Acute ethanol exposure increases GABAA receptor-mediated synaptic transmission at developing cerebellar Golgi cells. K. JOTTY*; Y. YANAGAWA; C. F. VALENZUELA. *Univ. of New Mexico, Gunma Univ.*

10:00 C58 **129.15** Dynamic characteristics of synaptic noise in neurons of the barrel cortex are layer-specific. O. REVAH; T. TCHUMACHENKO; F. WOLF; A. BINSHTOK; M. J. GUTNICK*. *Sch. of Vet Med, Hebrew Univ. Jerusalem, Max Planck Inst. for Brain Res., (3) Max Planck Inst. for Dynamics and Self-Organization, The Hebrew Univ. of Jerusalem.*

11:00 C59 **129.16** Fast signaling properties of parvalbumin-expressing interneurons in the hippocampus *in vivo*. J. GAN*; A. PERNÍA-ANDRADE; P. JONAS. *IST Austria.*

8:00 C60 **129.17** Optical vs electrical stimulation of dopamine release in nucleus accumbens slices: Regulation by local circuitry. J. R. MELCHIOR*; S. R. JONES. *Wake Forest Sch. of Med.*

POSTER

130. Oscillations and Synchrony in Neural Networks

Theme B: Neural Excitability, Synapses, and Glia: Cellular Mechanisms

Sun. 8:00 AM – *Walter E. Washington Convention Center*, Halls A-C

8:00 C61 **130.01** Cell-type specific hippocampal output during fast oscillations arises from the local synaptic wiring scheme. C. BÖHM*; Y. PENG; N. MAIER; J. F. A. POULET; J. R. P. GEIGER; D. SCHMITZ. *Neurowissenschaftliches Forschungszentrum, Charité Universitätsmedizin Berlin, Inst. für Neurophysiologie, Charité Universitätsmedizin Berlin, Cluster of Excellence NeuroCure, Max-Delbrück Ctr. for Mol. Med., Bernstein Ctr. for Computat. Neurosci., Ctr. for Neurodegenerative Dis. Berlin (DZNE).*

9:00 C62 **130.02** Interactions between network state, thalamic activity and the duration of sleep spindles. L. ACSADY*; A. SLÉZIA; F. MÁTYÁS; L. FARADZS-ZADE; K. D. HARRIS; P. BARTHÓ. *Inst. Exp. Med. Hung Acad Sci., UCL Inst. of Neurol.*

10:00 C63 **130.03** Studying hippocampal theta oscillation in a reduced septal-entorhinal-hippocampal system. Z. GU*; J. L. YAKEL. *NIEHS/NIH.*

11:00 C64 **130.04** Thermodynamic and statistical-mechanical measures for synchronization of bursting neurons. W. LIM*; S. KIM. *Daegu Natl. Univ. of Educ., Computat. Neurosci. Lab.*

8:00 C65 **130.05** Variability and constraints in spontaneous neuronal network remodeling. D. PANAS; H. AMIN; A. MACCIONE; L. BERDONDINI; M. H. HENNIG*. *Univ. of Edinburgh, IIT Inst. Italiano di Tecnologia, Edinburgh Univ.*

9:00 C66 **130.06** Stochastic occurrence of silent periods causes noise correlations in cortical circuits across different brain states. G. MOCHOL*; A. HERMOSO-MENDIZABAL; S. SAKATA; K. D. HARRIS; J. DE LA ROCHA. *IDIBAPS, Nencki Inst. of Exptl. Biol., Univ. of Strathclyde, Univ. Col. London.*

10:00 C67 **130.07** Sleep restores variability in synchronization and neuronal avalanche dynamics after sustained wakefulness in rats. C. MEISEL*; A. KLAUS; D. PLENZ. *NIMH.*

11:00 C68 **130.08** Fast-spiking inhibitory neuronal control of rhythmic dynamics during sensory processing, sleep and seizures in humans. O. J. AHMED*; J. S. NAFTULIN; E. N. ESKANDAR; L. R. HOCHBERG; S. S. CASH. *Massachusetts Gen. Hosp., Massachusetts Gen. Hosp., Brown Univ.*

8:00 C69 **130.09** Gamma oscillations in barrel cortex: Cell-class specific synchronization and relation with connected structures. C. M. PENNARTZ*; J. J. BOS; J. C. JACKSON; L. B. VAN MOURIK-DONGA; L. J. GENTET; M. VINCK. *Univ. of Amsterdam, Univ. of St. Thomas, Yale Univ.*

9:00 C70 **130.10** Spiking patterns of cannabinoid type I receptor expressing dendrite targeting hippocampal interneurons in awake mice. G. G. SZABO*; C. VARGA; I. SOLTESZ. *UC Irvine.*

10:00 C71 **130.11** Phase predictors of synchrony in noise-dominated neuron networks. J. BAUER*; F. R. FERNANDEZ; J. A. WHITE. *Univ. of Utah.*

11:00 C72 **130.12** Response variability in large scale networks of cortical neurons. N. HAROUSH*; S. MAROM. *Technion – Israel Inst. of Technol.*

8:00 D1 **130.13** Firings of interneurons modulated by short DBS trains in the hippocampal CA1 region of rat. J. CAO*; Z. FENG; Y. YU; Z. GUO. *Zhejiang Univerisity.*

9:00 D2 **130.14** Dendritic spikes induce ripples in parvalbumin interneurons during hippocampal sharp waves. Z. SZADAI*; B. CHIOVINI; G. F. TURI; D. PÁLFI; G. KATONA; A. KASZÁS; P. MAÁK; G. SZALAY; G. SZABÓ; M. MADARÁSZ; S. KÁLI; B. RÓZSA. *IEM-HAS, Pázmány Péter Catholic Univ., Columbia Univ., Budapest Univ. of Technol. and Econ.*

10:00 D3 **130.15** Prenatal stress produces persistence of remote memory and disrupts functional connectivity in the hippocampal-prefrontal cortex axis. I. NEGRON*; D. NEIRA; N. ESPINOSA; P. FUENTALBA; F. ABOITIZ. *Pontificia Univ. Católica De Chile, Fundación San Juan de Dios.*

POSTER

131. Oligodendrocytes: Cell Biology and Signaling I

Theme B: Neural Excitability, Synapses, and Glia: Cellular Mechanisms

Sun. 8:00 AM – *Walter E. Washington Convention Center*, Halls A-C

8:00 D4 **131.01** Downregulation of the microtubule associated protein tau impairs oligodendroglia differentiation and the process of early myelination in culture. V. SEIBERLICH*; N. G. BAUER; L. SCHWARZ; C. FFRENCH-CONSTANT; O. GOLDBAUM; C. RICHTER-LANDSBERG. *Univ. of Oldenburg, MRC Ctr. for Regenerative Med.*

• Indicated a real or perceived conflict of interest, see page 147 for details.
▲ Indicates a high school or undergraduate student presenter.

Thermodynamic Order Parameters and Statistical-Mechanical Measures for Characterization of the Burst and Spike Synchronizations of Bursting Neurons

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Abstract

We are interested in characterization of population synchronization of bursting neurons which exhibit both the slow bursting and the fast spiking timescales, in contrast to spiking neurons. Population synchronization may be well visualized in the raster plot of neural spikes which can be obtained in experiments. The instantaneous population firing rate (IPFR) $R(t)$, which may be directly obtained from the raster plot of spikes, is often used as a realistic collective quantity describing population behaviors in both the computational and the experimental neuroscience. For the case of spiking neurons, realistic thermodynamic order parameter and statistical-mechanical spiking measure, based on $R(t)$, were introduced in our recent work to make practical characterization of spike synchronization. Here, we separate the slow bursting and the fast spiking timescales via frequency filtering, and extend the thermodynamic order parameter and the statistical-mechanical measure to the case of bursting neurons. Consequently, it is shown in explicit examples that both the order parameters and the statistical-mechanical measures may be effectively used to characterize the burst and spike synchronizations of bursting neurons.