Programme

Sunday, 14/09

Time	Type	Title	Speaker
11:00 – 11:20		**Registration** ✏️	
11:20 – 11:30		**Welcome Address** 👥	
Session 1		*Neural Computing and Learning Systems*	
11:30 – 12:00	IT	*Networks of neural networks: the more is different*	Elena Agliari
12:00 – 12:30	IT	Random noise promotes slow heterogeneous synaptic dynamics important for robust working memory computation	Thiparat Chotibut
12:30 – 13:00	IT	Modeling how the brain learns to represent the world: Abstraction and Probability	Taro Toyoizumi
13:00 – 13:20	CT	Kinetic theory of nearly integrable systems	Miłosz Panfil
13:20 – 15:00		**Lunch Break** 🍴	
Session 2		*Brain Dynamics and Neurological Disorders*	
15:00 – 15:30	IT	Viral locomotion at cell surfaces: how influenza-A surfs over host defenses	Greg Huber
15:30 – 16:00	IT	Revealing spatial and temporal patterns in neuroimaging data with fractals	Jeremi K. Ochab
16:00 – 16:30	IT	Dynamics of neural motifs realized with a minimal memristive neuro-synaptic unit	Marcelo J. Rozenberg
16:30 – 16:50	CT	Measurement of the entropy production rate in a macroscopic replica of the Brownian ratchet	Antoine Naert
16:50 – 17:10	CT	Non-orthogonal eigenvectors, fluctuation-dissipation relations and entropy production	Wojciech Tarnowski
17:10 – 19:00		**Get-together meeting** ☕	

| IT | Invited Talk (30 min.) | CT | Contributed Talk (20 min.) |

Monday, 15/09

Session 3			*Computational Models of Disease, Development and Evolution*	
9:00 – 9:30	IT		Stochastic modeling of telomere shortening and reconstruction	Marek Kimmel
9:30 – 10:00	IT		Site frequency spectrum and genomic mutations analysis as a possible tool in predicting the emergence of a new SARS-CoV-2 subvariants	Monika Kurpas
10:00 – 10:30	IT		Dynamics of gene expression pattern formation in growing tissues	Marcin Zagórski
10:30 – 10:50	CT		Entropy-driven adaptation response in far-from-equilibrium living systems: A theoretical model with application to radioadaptation	Krzysztof Fornalski
10:50 – 11:30			**Coffee Break** ☕	
Session 4			*Network Science in Neurobiology and Collective Dynamics*	
11:30 – 12:00	IT		Structural balance is measurable with multidimensional attributes	Janusz Hołyst
12:00 – 12:30	IT		Hierarchy of chaotic dynamics in random modular neural networks	Łukasz Kuśmierz
12:30 – 13:00	IT		Statistical physics of drifting memory representations	Raoul-Martin Memmesheimer
13:00 – 13:20	CT		Understanding the thermodynamic limits of finite-time computation in small systems	Moupriya Das
13:20 – 13:40	CT		Spatiotemporal signatures of phase transitions in vertex models	Szymon Starzonek
13:40 – 15:00			**Lunch Break** 🍴	
Session 5			*Statistical Physics in Cellular and Neuronal Processes*	
15:00 – 15:30	IT		The hidden language of cancer genomes	Roman Jaksik
15:30 – 16:00	IT		Fluctuation-response relations for spiking nerve cells	Benjamin Lindner
16:00 – 16:20	CT		Long-term memory induces correlations and clustering of extreme events	Apurba Biswas
16:20 – 16:40	CT		The g-subdiffusion equation as a universal anomalous diffusion equation	Tadeusz Kosztołowicz

IT Invited Talk (30 min.)   **CT** Contributed Talk (20 min.)

Tuesday, 16/09

Kick-off		*Introduction to the Workshops*	
9:00 – 9:30	IT	Novel methods for analyzing dynamics of functional brain networks	Mária Ercsey-Ravasz
9:30 – 10:00	IT	Revealing spatial and temporal patterns in neuroimaging data with fractals	Paweł Oświęcimka
Workshop 1			
10:15 - 12:00	IT	Brain dynamics of mammals studied through the hierarchy of complex correlation patterns defining a robust functional architecture	Mária Ercsey-Ravasz & Levente Varga
12:00 – 12:30		**Coffee Break** ☕	
Workshop 2			
12:30 - 14:00	IT	Revealing spatial and temporal patterns in neuroimaging data with (multi)fractals	Paweł Oświęcimka, Jeremi K. Ochab & Marta Lotka
14:00 – 15:00		**Lunch Break** 🍴	
Session 6		*AI, Cognitive Neuroscience and Complex Brain Models*	
15:00 – 15:30	IT	From statistical physics to machine intelligence	Włodzisław Duch
15:30 – 16:00	IT	Learning capacity in networks of junctions with memory	Francesco Caravelli
16:00 – 18:00		**Coffee Break & Poster Session** ☕ ▦	
18:00 –		**Gala Dinner** 🍴	

| IT | Invited Talk (30 min.) | CT | Contributed Talk (20 min.) |

Wednesday, 17/09

Session 7		Computational Models of Disease, Development and Evolution	
9:00 – 9:30	IT	Price of information in games of chance	Pierpaolo Vivo
9:30 – 10:00	IT	Discontinuous phase transitions in opinion dynamics: The role of quenched disorder	Katarzyna Sznajd-Weron
10:00 – 10:30	IT	(Deep) learning to predict complex market dynamics	Silvia Bartolucci
10:30 – 10:50	CT	Tracer particles in correlated media - fluctuations and memory-induced effects	Marcin Pruszczyk
10:50 – 11:10	CT	Emergent noise control mechanism stabilizing gap gene pattern in Drosophila embryo	Maciej Majka
11:10 – 11:30		**Coffee Break** ☕	
Session 8		Aspects of Statistical Physics	
11:30 - 11:50	CT	Opportunities and challenges in statistical mechanics: The fluctuation dissipation theorem and its limitations	Fernando Oliveira
11:50 – 12:10	CT	Łukasiewicz logic and Tsallis entropy connected with free projections in the free and conditionally free probability	Marek Bożejko
12:10 – 12:30	CT	Integral formulation of run-and-tumble particles in simple confinements	Derek Frydel
12:30 – 12:50	CT	Polymer chains under oscillatory force in solvents of variable quality	Bogumiła Szostak
12:50 – 13:00		**Closing Address** 👥	
13:00 – 15:00		**Lunch Break** 🍴	

IT	Invited Talk (30 min.)	**CT**	Contributed Talk (20 min.)