Session Schedule

Monday, 2nd October

18:00- 20:00 **Welcome Reception**

Komaba Faculty House

Tuesday, 3rd October

Chair: Isao Tokuda, Co-chair: Hidetoshi Shimokawa

9:20- 9:30 **Opening Remarks**

K. Aihara

The University of Tokyo,

Aihara Complexity Modelling Project, ERATO, JST

9:30-10:10 **Synchronization and Complex Networks**

J. Kurths and C. Zhou

University of Potsdam

10:10-10:40 **Synchronization Index for Complex Systems with Two Time Scales**

M.C. Romano, M. Thiel, and J. Kurths

University of Potsdam

10:40-11:00 Break

Chair: Seung Kee Han, Co-chair: Gouhei Tanaka

11:00-11:40 **De-synchronization scenario reveals the modular structure of complex networks**

S. Boccaletti

CNR-Institute for Complex Systems

11:40-12:00 **Consistency in non-autonomous laser systems**

A. Uchida[1,2], S. Yoshimori[1], R. McAllister[2] ,and R. Roy[2]

1: Takushoku University, 2: University of Maryland

12:00-14:00 Lunch Break

Chair: Ying-Cheng Lai, Co-chair: Hiromichi Suetani

14:00-14:40 Phase compactons

A. Pikovsky[1] and P. Rosenau[2]

1: University of Potsdam

2: Tel Aviv University

14:40-15:10 Mapping Model Approach to Synchronization and Phase Dynamics

H. Fujisaka and N. Tsukamoto

Kyoto University

15:10-15:40 Break

Chair: Alexander Mikhailov, Co-chair: Hiroo Saito

15:40-16:20 Dynamics of Multiple Time Delay Systems

U. Parlitz, A. Ahlborn, and A. Többens

University of Goettingen

16:20-16:50 Aging and Clustering in Large Populations of Coupled Nonlinear Oscillators

H. Daido

Osaka Prefecture University

16:50-17:20 Self-Emergent Regular Motion of a Droplet under Photo/Electronic Nonequilibricity

K. Yoshikawa

Kyoto University

Wednesday, 4th October

Chair: Bernd Blasius, Co-chair: Takashi Kohno

9:30-10:10 **Collective Behavior in Excitable Media: Networks and Swarms**

K. Showalter

West Virginia University

10:10-10:40 **Patterns and Localized Spatiotemporal Chaos in Vibrated Non-Newtonian Fluids**

M. Sano

The University of Tokyo

10:40-11:00 Break

Chair: Stefano Boccaletti, Co-chair: Hiroyasu Andoh

11:00-11:40 **Synchronization of spiral waves as a method of their control and elimination**

K. Agladze

George Washington University

11:40-12:00 **Pulse Dynamics in a Model of Coupled Excitable Fibers -- a Variety of Patterns and Spatio-temporal Chaos --**

H. Suetani[1,3], T. Yanagita[2], and K. Aihara[3,1]

1: Aihara Complexity Modelling Project, ERATO, JST

2: Hokkaido University

3: The University of Tokyo

12:00-14:00 Lunch Break

Chair: Juergen Kurths, Co-chair: Miki Matsuo

14:00-14:40 **Synchronization of Molecular Protein Machines**

Yu. Togashi, V. Casagrande, and A.S. Mikhailov

Fritz-Haber Institute of the Max-Planck Society

14:40-15:10 **Synchronization in complex modular networks**

Y.-C. Lai, L. Huang, and K. Park

Arizona State University

15:10-15:50 Break

Chair: Kazu Aihara, Co-chair: Yuichi Katori

15:50-16:30 **Spatiotemporal Phase Dynamics of Human EEG**

W.S. Kim and S.K. Han

Chungbuk National University

16:30-16:50 **Synchronization and clustering of uncoupled limit-cycle oscillators induced by common external noises**

H. Nakao, K. Arai, and Y. Kawamura

Kyoto University

16:50-17:30 **How to Make the Theory of Phase Reduction More Complete**

Y. Kuramoto

Hokkaido University

Chair: Yoshito Hirata

17:40-18:40 **Short Oral Presentation by Each Poster Presenter**

18:40-20:40 **Banquet & Poster Session**

Thursday, 5th October

Chair: Miguel A. F. Sanjuan, Co-chair: Shunsuke Horai

9:40-10:10 **Inferring Phase Synchronization from Nonsynchronized Chaotic Data**

I. Tokuda

Japan Advanced Institute of Science and Technology

10:10-10:40 **Twin Surrogates to Test for Complex Synchronization**

M. Thiel, M.C. Romano, J. Kurths, M. Rolfs, and R. Kliegl

University of Potsdam

10:40-11:00 Break

Chair: Tohru Ikeguchi, Co-chair: Guoguang He

11:00-11:20 **Spontaneous motion coupled with reaction-diffusion system**

H. Kitahata, Y. Sumino, K. Nagai, and K. Yoshikawa

Kyoto University

11:20-11:40 **Nearly anti-phase synchronization in calling behavior of Japanese rain frogs**

I. Aihara

Kyoto University

11:40-12:00 **Synchronous Activities in Coupled Neurons Interconnected by Electrical and Inhibitory Synapses**

S. Tsuji[1], T. Ueta[2], H. Kawakami[2], and K. Aihara[1,3]

1: Aihara Complexity Modelling Project, ERATO, JST

2: Tokushima University, 3: The University of Tokyo

12:00-14:00 Lunch Break

Chair: Ulrich Parlitz, Co-chair: Kunichika Tsumoto

14:00-14:40 **Synchronization of Complex Spike Activity in the Olivocerebellar System: Underlying Mechanisms and Functional Significance**

E. Lang

New York University

14:40-15:00 **Time Series Analysis for Datasets Taken from Inferior Olive**

Y. Hirata[1], Eric J. Lang[2], and K. Aihara[1,3]

1: The University of Tokyo, 2: New York University

3: Aihara Complexity Modelling Project, ERATO, JST

15:00-15:30 Break

Chair: Konstantin Agladze, Co-chair: Shigeki Tsuji

15:30-16:00 **Episodic memory: A mathematical model for the hippocampus**

I. Tsuda, Y. Yamaguchi, and S. Kuroda

Hokkaido University

16:00-16:20 **Bistability of synchronous and asynchronous firing in inferior olive neurons and its mechanism**

Y. Katori[1], Y. Hirata[2], H. Suzuki[2], E.J. Lang[3], M. Kawato[4], and K. Aihara[1,2]

1: Aihara Complexity Modelling Project, ERATO, JST

2: The University of Tokyo

3: New York University Medical Center

4: ATR

16:20-16:50 Break

Chair: Kenneth Showalter, Co-chair: Munehisa Sekikawa

16:50-17:10 **Synchronized and Desynchronized Behaviors in GJ-coupled Network of Class I* Silicon Neuron**

T. Kohno[1], T. Takemoto[2], and K. Aihara[1,3]

1: The University of Tokyo, 2: Hitachi Ltd.

3: Aihara Complexity Modelling Project, ERATO, JST

17:10-17:40 **Synchronization in STDP neural network and its network structure**

T. Ikeguchi[1], T. Suzuki[2], R. Hosaka[1], and H. Kato[1]

1: Saitama University

2: Doshisha University

Friday, 6th October

Chair: Luonan Chen, Co-chair: Hirokazu Tozaki

9:30-10:10 **Dynamic of epidemic outbreaks and hierarchic synchronization in a network of cities with distributed sizes**

B. Blasius

University of Oldenburg

10:10-10:30 **Entrainment of Circadian Oscillations by Light-Dark Cycles**

G. Kurosawa[1], K. Tsumoto[1], and K. Aihara[1,2]

1: Aihara Complexity Modelling Project, ERATO, JST

2: The University of Tokyo

10:40-11:00 Break

Chair: Arkady Pikovsky, Co-chair: Koh Hashimoto

11:00-11:40 **Synchronization in Cellular System Mediated by Noises and perturbations**

L. Chen

Osaka Sangyo University

11:40-12:00 **Effects of Light Waveforms on a Circadian Oscillation in Neurospora**

K. Tsumoto

Aihara Complexity Modelling Project, ERATO, JST

12:00-14:00 Lunch Break

Chair: Eric Lang, Co-chair: Gen Kurosawa

14:00-14:20 **Entrainment of Complex Oscillator Networks and Implications for Biological Clocks**

H. Kori[1] and A.S. Mikhailov[2]

1: Hokkaido University

2: Fritz-Haber-Institut der Max-Planck-Gesellschaft

14:20-14:40 **Synchronizing a Multicellular System by External Input**

R. Wang[1,3], L. Chen[1,2,3], and K. Aihara[1,3]

1: Aihara Complexity Modelling Project, ERATO, JST

2: Osaka Sangyo University

3: The University of Tokyo

14:40-15:00 **Stochastic Model of Chaotic Phase Synchronization**

T. Horita[1], T. Yamada[2], K. Ouchi[3], and H. Fujisaka[4]

1: Osaka Prefecture University

2: KIT Senior Academy

3: Kobe Design University

4: Kyoto University

15:00-15:30 Break

Chair: Hideyuki Suzuki, Co-chair: Xingming Zhao

15:30-15:50 **Synchronization and propagation of bursts in networks of coupled neurons**

Gouhei Tanaka

The University of Tokyo

15:50-16:30 **Synchronization Patterns in Coupled Map-based Neuron Models**

H. Cao[1,2], B. Ibarz[2], G. Tanaka[3], and M.A.F. Sanjuán[2]

1: Beijing Jiaotong University

2: Universidad Rey Juan Carlos

3: The University of Tokyo

16:30-16:40 **Closing Remarks**