

# International Workshop on “Mathematical Modeling of Complex Systems with Applications to Biomedicine, Physics and the Technology of Materials”



**23 – 25 JULY, 2015**

## **LECTURE PROGRAMME**

### **Scientific Organizing Committee:**

Dr. Astero Provata (NCSR Demokritos, Athens). Prof. Giorgos Tsironis (University of Crete and FORTH, Heraklion), Prof. Tassos Bountis (University of Patras), Prof. Tassos Bezerianos (National University of Singapore/University of Patras).

### **Local organizing committee:**

Prof. Tassos Bountis (Chairman, University of Patras), Dr. Ioanna Hitzanidi, Dr. Helen Chriistodoulidi, Dr. George Kanellopoulos, and Vasileios Kanas.

### **Administrative Team:** Angela Cotronis

The event is supported by the Thales project MACOMSYS, co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program: Thales. Investing in knowledge society through the European Social Fund.



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COMPLEX SYSTEMS SOCIETY



Thursday 23 July

Chairman: L. Vlahos

9:30 – 14:00 **Morning session**

9:30 – 10:30 *"Complexity Science: What Can We Learn From Mathematical Models?"*

Tassos Bountis (University of Patras)

10:30 – 11:30 *"Collective Dynamics and Wave Formation in Multi-Particle Flow"*

Ko van der Weele (University of Patras)

11:30 – 12:00 **Coffee break**

12:00 – 13:00 *"Nonlinear Wave Propagation in Discrete and Continuous Systems I"*

Vasilios Rothos (University of Thessaloniki)

*"Synchronization in Large Systems of Linear Oscillators"*

13:00 – 14:00

J.P.P. Veerman (QCN, Heraklion and Portland State University, USA)

14:00 – 15:00 **Lunch break - Poster Session**

15:00 – 18:00 **Afternoon session**

15:00 – 15:30 *"Searching for Stable Configurations in Multiplanet-Systems"*

G. Voyatzis (University of Thessaloniki)

15:30 – 16:00 *"Regular and Chaotic Regions in Dynamics of Exoplanets"*

K. Antoniadou (University of Thessaloniki)

*"Numerical Methods for Hamiltonian Systems I"*

16:00 – 18:00 Charalambos Skokos (University of Cape Town, South Africa)

Friday 24 July

Chairman: T. Bountis

9:30 – 14:00 **Morning session**

9:30 – 10:30 *"Synchronization and Stochastic Resonance in Chaotic Systems I"*

Vasilios Basios (Université Libre de Bruxelles)



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|---------------|--|
| 10:30 – 11:30 | <i>“Formation and Coarsening of Faraday Heaps “</i><br>Ko van der Weele (University of Patras)                                 |
| 11:30 – 12:00 | <b>Coffee break</b>  |
| 12:00 – 12:40 | <i>“Modeling Drug Release Profiles Through Monte Carlo Simulations”</i><br>G. Kalosakas (University of Patras)                 |
| 12:40 – 13:20 | <i>“Synchronization in Networks of Coupled Nonlinear Oscillators”</i><br>Vasileios Kanas (University of Patras)                |
| 13:20 – 14:00 | <i>“Emergence of traveling density waves in cyclic multiparticle transport”</i><br>George Kanellopoulos (University of Patras) |
| 14:00 – 15:00 | <b>Lunch break - Poster Session</b>  |
| 15:00 – 19:00 | <b>Afternoon session (in the Small Auditorium I - 4)</b>   |
| 15:00 – 17:00 | <i>“Mathematics and Open Questions in Neuroscience”</i><br>Thanassis Fokas (Cambridge University and Academy of Athens)        |
| 17:00 – 18:00 | <i>“Synchronization and Stochastic Resonance in Complex Systems II”</i><br>Vasilios Basios (Université Libre de Bruxelles)     |
| 18:00 – 19:00 | Plenary Lecture: <i>“Analytic Study of Chaos”</i><br>George Contopoulos (CAAM, Academy of Athens)                              |
| 20:00 – 23:00 | Cultural Program with Songs from Patras Four Voice Male Choir “G. Triantis” and PhD School – <b>Conference Dinner</b>          |

Saturday 25 July

Chairperson: A. de Sanctis

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| 9:30 – 14:00  | <b>Morning session</b>  |
| 9:30 - 11:30  | <i>“Complex Social Networks: Theory and Practice”</i><br>Moses Boudourides (University of Patras) |
| 11:30 - 12:00 | <b>Coffee break</b>   |
| 12:00 – 14:00 | <i>“An Introduction to Global Systems Science”</i><br>Jeff Johnson (British Open University)      |



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14:00 – 15:00 Lunch break – Poster session

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15:00 -18:00 **Afternoon free**

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Chairman: V. Basios

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9:30 – 14:00 **Morning session**

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9:30 - 10:30 *“Numerical Methods for Hamiltonian Systems II”*  
Charalambos Skokos (University of Cape Town, South Africa)

10:30 - 11:30 *“Nonlinear Wave Propagation in Discrete and Continuous Systems II”*  
Vasilios Rothos (University of Thessaloniki)

11:30 - 12:00 **Coffee break**

12:00 – 13:00 *“A Single Particle Impact Model for Motion in Avalanches”*  
J.P.P. Veerman (QCN, Heraklion and Portland State University, USA)

13:00 – 14:00 *“Chimera-like States in Modular Neural Networks”*  
Ioanna Hizanidis (University of Crete, Heraklion)

14:00 – 15:00 **Lunch Break – Poster session**

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15:00 -18:00 **Afternoon free**

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