



# INTERNATIONAL SCHOOL AND WORKSHOP



## NONLINEAR MATHEMATICAL PHYSICS AND NATURAL HAZARDS

*November 28 – December 02, 2013,  
Bulgarian Academy of Sciences, Sofia*

### Supported by:

- ▣ UNESCO Regional Bureau for Science and Culture in Europe, VENICE;
- ▣ SOUTHEASTERN EUROPEAN NETWORK IN MATHEMATICAL AND THEORETICAL PHYSICS (SEENET-MTP);
- ▣ BULGARIAN ACADEMY OF SCIENCES (BAS);
- ▣ INSTITUTE FOR NUCLEAR RESEARCH AND NUCLEAR ENERGY (INRNE)

*Conference venue: Kedar Hotel, Dom na Uchenia,  
1113 Sofia, Geo Milev, 50 Shipchenski Prohod Blvd.,  
+359 2 8702140, +359 2 8710009  
Arrival day: 28.11.2013; Departure day: 02.12.2013*

### Organizing Committee:

Boyka Aneva (Bulgaria), Giuliano F. Panza (ICTP, Trieste, Italy), Peter Varga (Hungary), Ivanka Paskaleva (Bulgaria), Mihaela Kouteva-Guentcheva (Bulgaria), Mario Scalet (UNESCO Venice office).

## PROGRAMME

<b>Thursday,</b> 28.11.2013		Arrival day
18:00	Registration of Participants	
<b>Friday,</b> 29.11.2013		
9:00 am	<b>Opening of the meeting</b> <i>UNESCO Representative,</i> <i>Representatives of the Bulgarian Academy of Sciences,</i> <i>Representative of the Organising Committee</i>	
<b><u>SESSION SEISMIC HAZARD AND SEISMIC RISK</u></b>		<i>CHAIRMAN: G.Chouliaras</i>
9:30 – 10:15	<b>G.F.Panza, A.Peresan, A.Magrin, F.Vaccari (ICTP),</b> The Hazard in Using Earthquakes Probabilities for Seismic Hazard Assessment.	
10:15 – 11:00	<b>G.Marmureanu, C.O.Cioflan, Al. Marmureanu, C. Ionescu, (National Institute for Earth Physics (NIEP)),</b> Nonlinear Seismology the Actual Seismology in this Century.	
11:00 – 11:30	<b>Coffee break</b>	
11:30 – 12:15	<b>D.Dojcinovski (IZIIS, Skopje),</b> Seismic Monitoring of Structures – a Tool for Urban Seismic Hazard Reduction.	
12:15 – 12:45	<b>K. Hadjiyski, S. Simeonov (NIGGG-BAS)</b> Seismic monitoring and Instrumentation for Earthquake Engineering Application in Bulgaria	
13:00	<b>Lunch</b>	
<b><u>SESSION CHAOTIC DYNAMICS</u></b>		<i>CHAIRMAN: R.Constantinescu</i>
15:00 – 15:30	<b>A.Nicolaidis (Aristotle University of Thessaloniki),</b> The Chaotic versus Regular Behavior in Yang-Mills Theories.	
15:30 – 16:00	<b>K.Kukic (University of Belgrade), V.Dragovic (Mathematical Institute, SANU),</b> The Application of the Discriminantly Separable Polynomials in Dynamical Systems.	
16:00 – 16:30	<b>Coffee break</b>	
<b><u>DEVELOPMENT SESSION</u></b>		<i>MODERATOR: M.Scalet</i>
16:30 – 18:30	<b>Round Table Discussion</b> Perspectives of collaboration on Disaster Risk Assessment and Management in South East Europe and joint EU projects. Moderated by UNESCO.	
19:00	<b>Welcome cocktail</b>	
19:30	<b>Dinner</b>	

Saturday,  
30.11.2013

**SESSION SOLITON PHYSICS AND INTEGRABILITY**

CHAIRMAN: *A.Nicolaidis*

9:15 – 10:00	<b>A.Zabrodin (ITEP, Moscow)</b> , Spectra of integrable quantum magnets via classical many-body systems.
10:00 – 10:30	<b>R.Constantinescu (University of Craiova)</b> , Symmetries and Invariant Solutions for Evolutionary Equations.
10:30 – 11:00	<b>V.Gerdjikov (INRNE-BAS)</b> , Riemann-Hilbert Problems, Families of Commuting Operators and Soliton Equations.
11:00 – 11:30	<b>Coffee break</b>
11:30 – 12:00	<b>D.Mladenov (University of Sofia)</b> , Bianchi cosmological models as integrable geodesic flows.
12:00 – 12:30	<b>T.Popov (INRNE-BAS)</b> , Parastatistics and Homotopy Algebras.
12:30 – 13:00	<b>N.Nikolov (INRNE-BAS)</b> , An operadic bridge between renormalization theory and vertex algebras
13:00	<b>Lunch</b>

**SESSION STOCHASTIC DYNAMICS AND SELFORGANIZING SYSTEMS**

CHAIRMAN: *A.Zabrodin*

15:30 – 16:15	<b>G.Schuetz (FZ Julich)</b> , The Space-time Structure of Extreme Current Events in the ASEP.
16:15 – 17:00	<b>G.Pruessner (Imperial College, London)</b> , Self-Organised Criticality: It's Past and a Recent Field Theory.
17:00 – 17:30	<b>Coffee break</b>
17:30 – 19:00	<b><u>POSTER SESSION</u></b>
19:30	<b>Conference Dinner</b>

Sunday,  
01.12.2013

**SESSION NONLINEAR SEISMOLOGY  
AND EARLY WARNING SYSTEMS**

CHAIRMAN: *A. Peresan*

9:30 – 10:15	<b>M.Radulian (NIEP)</b> , Nonlinear dynamics in Vrancea source: numerical simulation.
10:15 - 11:00	<b>C.Ionescu, Al.Marmureanu, G.Marmureanu (NIEP)</b> , Romanian-Bulgarian early warning system (EWS) developed for strong Vrancea earthquakes.
11:00 – 11:30	<b>Coffee break</b>

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### **SESSION SEISMIC MONITORING AND NETWORKING**

*CHAIRMAN: D.Dojcinovski*

11:30 – 12:00	<b>M.Popa (NIEP)</b> , Romanian Network for Seismic and Crustal Movement Monitoring.
12:00 – 12:30	<b>D. Cernih (Seismological Observatory, Skopje)</b> , Seismic Monitoring and Data Processing in Seismological Observatory in Skopje – Republic of Macedonia – basis for a complex geophysical monitoring.

13:00

**Lunch**

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### **SESSION PROGNOSTIC SEISMIC HAZARD ASSESSMENT**

*CHAIRMAN: G. Marmureanu*

16:15 – 17:00	<b>G.Chouliaras (Institute of Geodynamics, Athens)</b> , Statistical Seismology and Earthquake Prediction in Greece.
17:00 – 17:30	<b>Coffee break</b>
17:30 – 18:15	<b>A.Peresan (ICTP), A.Nekrasova, V.Kossobokov (MITP-RAN), G.F.Panza (ICTP)</b> , Predicting Earthquakes and Related Ground Shaking: Testing and Validation Issues.

18:30

**Closing**

19:30

**Dinner**

Monday,  
02.12.2013

**Departure**

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