Statistical Seismology and Earthquake Prediction Research in Greece

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The instrumental earthquake catalog of the National Observatory of Athens (NOA) starts in 1964 and it reports seismic events uninterrupted for the last 50 years. This is the most detailed seismicity catalog for Greece containing more than 160000 events and it is compiled daily by standard seismological observatory practice which has been established at the Geodynamic Institute since 1893. Greece has the highest seismicity production in Europe and it is monitored by the Hellenic Unified Seismological Network (HUSN) coordinated by NOA. At present, the network is composed by more than 145 broadband seismic stations and 80 accelerographic stations transmitting real-time data and automatic parametric solutions are accessible via the internet (www.gein.noa.gr).

Earthquake catalogs are the basic product of seismology and a plethora of statistical investigations and earthquake prediction research have employed the NOA catalog as the backbone of earthquake hazard and risk studies. In this presentation a detailed statistical analysis of the NOA catalog is demonstrated in terms of the homogeneity and magnitude of completeness. Anomalous seismicity patterns prior to large earthquakes in Greece are investigated by the mapping of seismicity rates that are associated with the precursory phenomena of accelerated seismic release and seismic quiescence. In addition, recent seismicity swarms associated with volcanic and tectonic activity are analyzed in order to reveal local and regional tectonic stress variations which are associated with the stress field.

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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

IInd ANNOUNCEMENT

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).

The **International School and Workshop on Nonlinear Mathematical Physics and Natural Hazards,** 28.11-02.12.2013, BAS-Sofia, is organized within the framework of South East Europe Network in Mathematical and Theoretical Physics (SEENET MTP). The meeting is devoted to current advanced achievements in the field of nonlinear mathematical physics and modeling of critical phenomena that can cause catastrophic events to occur. It is an interdisciplinary meeting for scientists who are developing mathematical and computational methods for study and analysis of nonlinear phenomena and who are working actively to apply these tools and create conditions to mitigate and reduce the negative consequence of natural and socio-economical disaster risk.

The meeting aims to develop collaboration at regional and European level for better understanding and modeling phenomena that can cause natural and socio-economical disasters and to contribute to our joint efforts on mitigation of the negative consequence of natural disasters. It shall be a step forward to capacity building in South East Europe through development of skills, exchange of knowledge and training on mathematical methods for modeling nonlinear phenomena, disaster risk preparedness and natural hazards mitigation.

MAJOR TOPICS

- Self-Organizing Systems
- Markov Processes and Stochastic Dynamics; Chaotic Dynamics
- Exactly Solvable and Integrable Systems
- Soliton Physics
- Seismic hazard and seismic risk;
- Seismic monitoring and networking; Earthquake engineering monitoring;
- Early warning systems.

Specific session:

ROUND TABLE*: DISCUSSION ON THE PERSPECTIVES OF COLLABORATION IN THE REGION WITH THE SEE DISASTERS RISK ASSESSMENT AND MITIGATION NETWORK AND PROMOTION OF JOINT EU PROJECTS*;
Friday, 29 November 2013; 16:30h.

Presentations: There will be school lectures of 45 min. duration (including discussion) and session talks\posters on current research results. The presentations should be prepared in MS Power point or PDF format. If you wish to use your own computer it has to be equipped with an appropriate adaptor. A session for the poster presentations (poster size A1 594x841mm) will be organized.

Participation: The meeting is intended for participants mainly from South East Europe, as well as from countries from all over the world.

Registration fee: 100 Euro. The registration fee covers Conference materials (compact disk with participants' contributions), welcome cocktail, conference dinner and break refreshment drinks. Declaration of interest should be sent to **sofiameeting2013@gmail.com**.

Financial support: The organizers would like to encourage and support the active participation of advanced students and young scientists from South East Europe. The local expenses and part of travel costs for a number of lecturers and for participants from South East Europe will be covered. The financial support will be offered according to the sponsors' rules.

Accommodation: The participants will be accommodated in hotel Kedar, where the conference will be held.

PRELIMINARY PROGRAMME

Thursday, 28.11.2013	Arrival day
18:00	Registration of Participants
Friday, 29.11.2013	
9:00 am	**Opening of the meeting** *UNESCO Representative,* *Representatives of the Bulgarian Academy of Sciences,* *Representative of the Organising Committee*

SESSION SEISMIC HAZARD AND SEISMIC RISK — *CHAIRMAN: G.Chouliaras*

9:30 – 10:15	***G.F.Panza, A.Peresan, A.Magrin, F.Vaccari (ICTP)***, The Hazard in Using Earthquakes Probabilities for Seismic Hazard Assessment.
10:15 – 11:00	***G.Marmureanu, C.O.Cioflan, Al. Marmureanu, C. Ionescu, (National Institute for Earth Physics (NIEP))***, Nonlinear Seismology the Actual Seismology in this Century.
11:00 – 11:30	**Coffee break**
11:30 – 12:15	***D.Dojcinovski (IZIIS, Skopje)***, Seismic Monitoring of Structures – a Tool for Urban Seismic Hazard Reduction.
12:15 – 12:45	***K. Hadjiyski, S. Simeonov*** (NIGGG-BAS) Seismic monitoring and Instrumentation for Earthquake Engineering Application in Bulgaria
13:00	**Lunch**

SESSION CHAOTIC DYNAMICS — *CHAIRMAN: R.Constantinescu*

15:00 – 15:30	***A.Nicolaidis (Aristotle University of Thessaloniki),*** The Chaotic versus Regular Behavior in Yang-Mills Theories.
15:30 – 16:00	***K.Kukic (University of Belgrade), V.Dragovic (Mathematical Institute, SANU),*** The Application of the Discriminantly Separable Polynomials in Dynamical Systems.
16:00 – 16:30	**Coffee break**

DEVELOPMENT SESSION — *MODERATOR: M.Scalet*

16:30 – 18:30	***Round Table Discussion*** Perspectives of collaboration on Disaster Risk Assessment and Management in South East Europe and joint EU projects. Moderated by UNESCO.
19:00	**Welcome cocktail**
19:30	**Dinner**

Saturday, 30.11.2013	
SESSION SOLITON PHYSICS AND INTEGRABILITY	*CHAIRMAN: A.Nicolaidis*
9:15 – 10:00	***A.Zabrodin (ITEP, Moscow)***, Spectra of integrable quantum magnets via classical many-body systems.
10:00 – 10:30	***R.Constantinescu (University of Craiova)***, Symmetries and Invariant Solutions for Evolutionary Equations.
10:30 – 11:00	***V.Gerdjikov (INRNE-BAS),*** Riemann-Hilbert Problems, Families of Commuting Operators and Soliton Equations.
11:00 – 11:30	**Coffee break**
11:30 – 12:00	***D.Mladenov (University of Sofia)***, Bianchi cosmological models as integrable geodesic flows.
12:00 – 12:30	***T.Popov (INRNE-BAS)***, Parastatistics and Homotopy Algebras.
12:30 – 13:00	***N.Nikolov (INRNE-BAS)***, An operadic bridge between renormalization theory and vertex algebras
13:00	**Lunch**
SESSION STOCHASTIC DYNAMICS AND SELFORGANIZING SYSTEMS	*CHAIRMAN: A.Zabrodin*
15:30 – 16:15	***G.Schuetz (FZ Julich),*** The Space-time Structure of Extreme Current Events in the ASEP.
16:15 – 17:00	***G.Pruessner (Imperial College, London)***, Self-Organised Criticality: It's Past and a Recent Field Theory.
17:00 – 17:30	**Coffee break**
17:30 – 19:00	**POSTER SESSION**
19:30	**Conference Dinner**
Sunday, 01.12.2013	
SESSION NONLINEAR SEISMOLOGY AND EARLY WARNING SYSTEMS	*CHAIRMAN: A. Peresan*
9:30 – 10:15	***M.Radulian (NIEP)***, Nonlinear dynamics in Vrancea source: numerical simulation.
10:15 - 11:00	***C.Ionescu, Al.Marmureanu, G.Marmureanu (NIEP),*** Romanian-Bulgarian early warning system (EWS) developed for strong Vrancea earthquakes.

11:00 – 11:30	**Coffee break**

SESSION SEISMIC MONITORING AND NETWORKING

CHAIRMAN: D.Dojcinovski

11:30 – 12:00	***M.Popa (NIEP)***, Romanian Network for Seismic and Crustal Movement Monitoring.
12:00 – 12:30	***D. Cernih (Seismological Observatory, Skopje)***, Seismic Monitoring and Data Processing in Seismological Observatory in Skopje – Republic of Macedonia – basis for a complex geophysical monitoring.
13:00	**Lunch**

SESSION PROGNOSTIC SEISMIC HAZARD ASSESSMENT

CHAIRMAN: G. Marmureanu

16:15 – 17:00	***G.Chouliaras (Institute of Geodynamics, Athens)***, Statistical Seismology and Earthquake Prediction in Greece.
17:00 – 17:30	**Coffee break**
17:30 – 18:15	***A.Peresan (ICTP), A.Nekrasova, V.Kossobokov (MITP-RAN), G.F.Panza (ICTP)***, 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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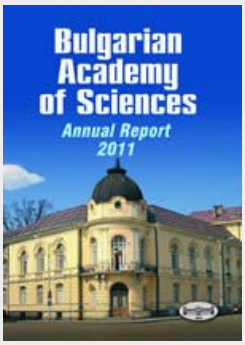

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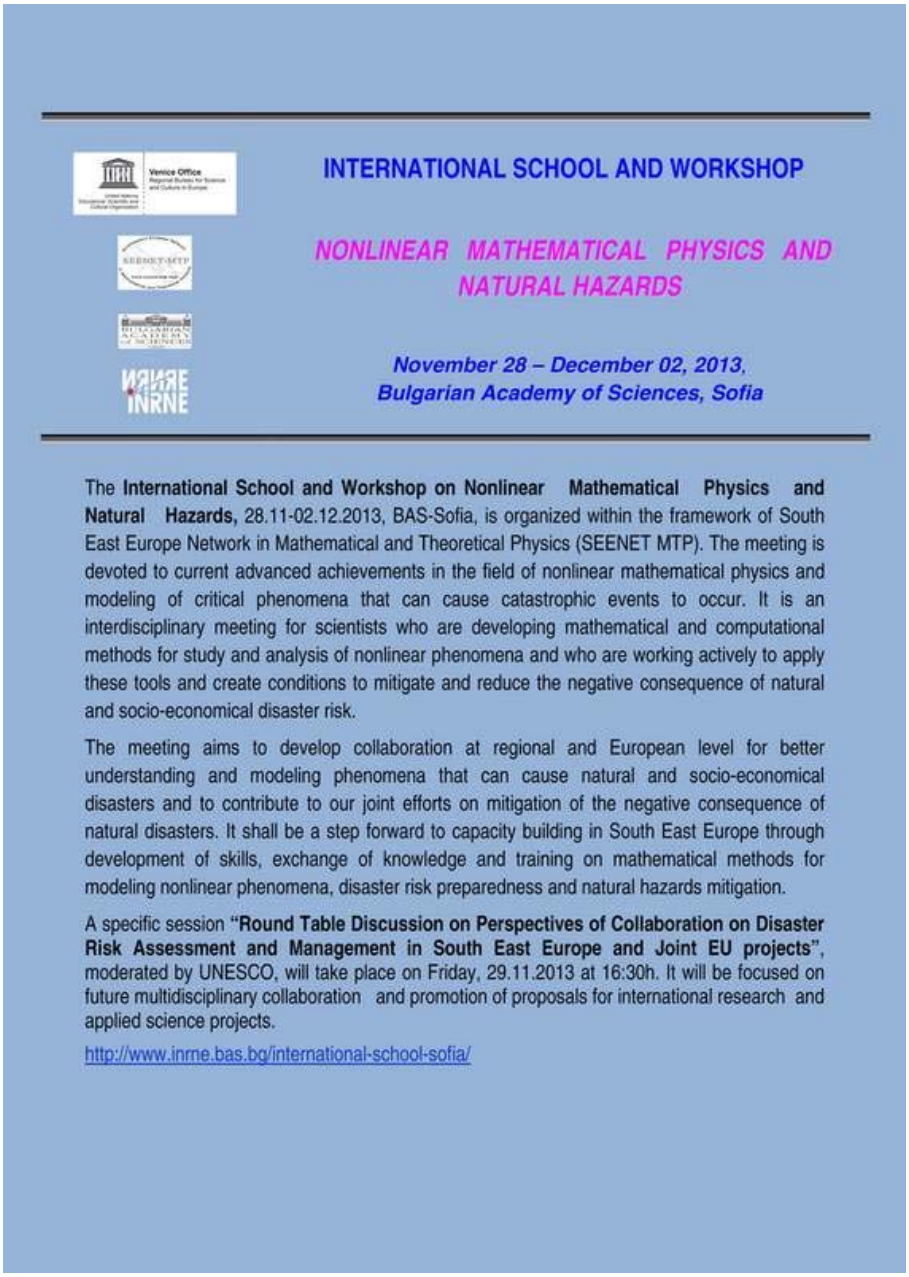

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A specific session **"Round Table Discussion on Perspectives of Collaboration on Disaster Risk Assessment and Management in South East Europe and Joint EU projects"**, moderated by UNESCO, will take place on Friday, 29.11.2013 at 16:30h. It will be focused on future multidisciplinary collaboration and promotion of proposals for international research and applied science projects.

http://www.inrne.bas.bg/international-school-sofia/

Research fields

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Biodiversity, Bioresources and Ecology

Climate Changes, Risks and Natural Resources

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