



**Southeastern European Network  
in Mathematical and Theoretical Physics**

*15 Years of the SEENET-MTP*

Goran Djordjević, Danilo Delibašić,  
Milan Milošević and Radu Constantinescu

Niš, Serbia

**2018**

## **Origins**

**What:** Southeastern European Network in Mathematical and Theoretical Physics (SEENET-MTP)

**Why:** Importance and necessity of providing a framework for institutional capacity-building in Mathematical and Theoretical Physics, covering different levels in science and education, as well as bridging the gap between Southeastern and Western European scientific community

**Who:** Participants of the UNESCO-ROSTE-sponsored BALKAN WORKSHOP BW2003 “Mathematical, Theoretical and Phenomenological Challenges beyond the Standard Model: Perspectives of Balkans Collaboration”, from Bulgaria, Croatia, Greece, Romania, Serbia and Montenegro, Turkey, as well as 10 other countries. The Network was a natural extension of the WIGV initiative (Scientists in Global Responsibility) launched by Prof. Julius Wess in 1999.

**When:** August 30, 2003

**Where:** Vrnjačka Banja, Serbia



*Participants of the Balkan Workshop BW2003*

## **SEENET-MTP Structure**

**Executive Committee:** The primary objectives of the Executive Committee (EC) are the elaboration of the Network's program, its implementation, and the expansion of the Network's financial base. The member institutions – Network Nodes from each country are represented by at least one member in the EC. Depending on the budget, the EC holds regular annual meetings. The president of the EC is the Executive Director of the SEENET-MTP and its Centre.

**Representative Committee:** All Network Nodes are represented in the Representative Committee (RC) by one person. All members of the RC are included in the preparation and implementation of the Network activities. The Full Network Nodes' representatives can vote on financial matters. Depending on the budget, the RC holds regular biannual meetings. The president of the RC is also the President of the SEENET-MTP Network. In the period between 2003 and 2009, the executive role in the Network was performed by the Coordinator.

**Scientific Advisory Committee:** The Scientific Advisory Committee (SAC) includes a number of outstanding and leading international researchers from both the Southeastern European and other regions of the world. The main responsibilities of the SAC are the following: advise the Network on the scientific topics to promote and on the corresponding actions to take, advise the Network on the scientific events to organise, help the Network on preparing applications and propose funding opportunities.

## Leadership

### Presidents and Coordinator:

**Goran Djordjević**, Faculty of Sciences and Mathematics, University of Niš (Serbia) – Coordinator (2003 - 2009)

**Radu Constantinescu**, Faculty of Mathematics and Natural Sciences, University of Craiova (Romania) – President (2009 - 2013)

**Dumitru Vulcanov**, Faculty of Physics, West University of Timisoara (Romania) – President (2013 - present)



*Radu Constantinescu, Goran Djordjevic and Dumitru Vulcanov  
(from left to right)*

### SAC Coordinators:

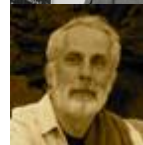
**Julius Wess** (2003 - 2007)

Max-Planck-Institut für Physik  
München, Germany



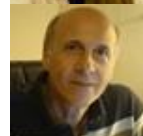
**Goran Senjanović** (2008 - 2013)

ICTP  
Trieste, Italy



**Ignatios Antoniadis** (2014 - present)

LPTHE, UMR CNRS / ITP  
Paris, France / Bern, Switzerland



## **Executive Committee**

### **Viorel Ciornea**

Institute for Applied Physics, Chisinau, **Moldova**



### **Hristo Dimov**

Faculty of Physics, Sofia University, **Bulgaria**



### **Argyris Nikolaidis**

Section of Nuclear and Particle Physics,  
Aristotle University of Thessaloniki, **Greece**



### **Yurii Sitenko**

Bogolyubov Institute for Theoretical Physics,  
National Academy of Science of Ukraine, Kyiv, **Ukraine**



### **Kayhan Ulker**

Physics Department, Mimar Sinan Fine Arts  
University, Istanbul, **Turkey**



### **Mihai Visinescu**

National Institute for Physics and Nuclear  
Engineering, Bucharest, **Romania**



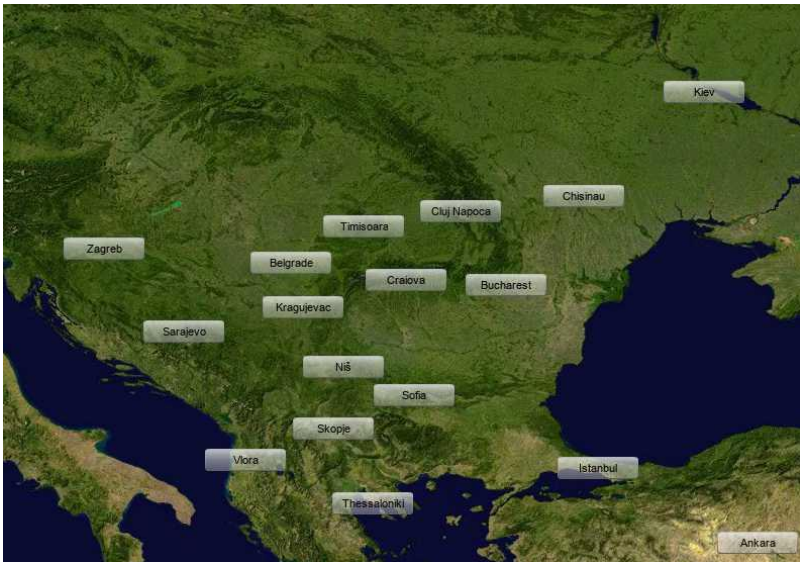
### **Goran Djordjević**

Executive director

## Representative Committee

The members of the RC are:

**Plamen Bozhilov** (Sofia, Bulgaria), **Marija Dimitrijević Cirić** (Belgrade, Serbia), **Hristo Dimov** (Sofia, Bulgaria), **Goran Djordjević** (Niš, Serbia), **Vladimir Dragović** (Belgrade, Serbia), **Miroljub Dugić** (Kragujevac, Serbia), **Ziya B. Güvenç** (Ankara, Turkey), **Predrag Jovanović** (Belgrade, Serbia), **Silvana Mico** (Vlora, Albania), **Alexandru Marcu** (Cluj-Napoca, Romania), **Marijan Mileković** (Zagreb, Croatia), **Argyris Nikolaidis** (Thessaloniki, Greece), **Branislav Sazdović** (Belgrade, Serbia), **Nikolai Iorgov** (Kyiv, Ukraine), **Kayhan Ulker** (Istanbul, Turkey), **Viktor Urumov** (Skopje, Macedonia), **Mihai Visinescu** (Bucharest, Romania), **Dumitru Vulcanov** (Timisoara, Romania), **Roxana Zus** (Bucharest, Romania)



*The SEENET-MTP Network Nodes*

## **Scientific Advisory Committee**

**Loriano Bonora,**

SISSA,  
Trieste, **Italy**



**Alexei Morozov**

ITEP, Moscow,  
**Russia**



**Lars Brink**

Chalmers University of  
Technology,  
Göteborg, **Sweden**



**Fernando Quevedo**

ICTP, Trieste, **Italy**



**Emilian Dudas**

CPHT, Ecole Polytech-  
nique, Palaiseau-Paris,  
**France**



**Ioannis Rizos**

Department of Physics,  
University of Ioannina,  
**Greece**



**Georgi Dvali**

LMU and MPI,  
Munich, **Germany**



**Timo Weigand**

CERN, Geneva,  
**Switzerland**



**Marc Henneaux**

Physique Théorique Et  
Mathématique, Universi-  
té Libre De Bruxelles,  
**Belgium**



**Ignatios Antoniadis**

Coordinator

## **Full Network Nodes**

- Centre for Dynamical Systems, Geometry and Combinatorics, MI SANU, Belgrade (Serbia)
- Astronomical Observatory, Belgrade (Serbia)
- Faculty of Physics, University of Belgrade (Serbia)
- National Institute for Physics and Nuclear Engineering, Bucharest (Romania)
- Faculty of Physics, University of Bucharest (Romania)
- Institute for Applied Physics, Chisinau (Moldova)
- Department of Theoretical and Computational Physics, Faculty of Physics, University of Babes-Bolyai, Cluj- Napoca (Romania)
- Faculty of Mathematics and Natural Sciences, University of Craiova (Romania)
- Physics Department, Mimar Sinan Fine Arts University, Istanbul (Turkey)
- Department of Physics, Faculty of Sciences and Mathematics, University of Kragujevac (Serbia)
- Bogolyubov Institute for Theoretical Physics, National Academy of Science of Ukraine, Kyiv (Ukraine)
- Department of Physics, Faculty of Sciences and Mathematics, University of Niš (Serbia)
- Faculty of Physics, Sofia University (Bulgaria)
- Section of Nuclear and Particle Physics, Aristotle University of Thessaloniki (Greece)
- Faculty of Physics, West University of Timisoara (Romania)



## **Other Network Nodes**

Cankaya University, **Ankara (Turkey)**, Center for Theoretical Physics, Institute of Physics, **Belgrade (Serbia)**, Department of Physics, Bogazici University, **Istanbul (Turkey)**, Department of Physics, Faculty of Science, University of **Sarajevo (Bosnia and Herzegovina)**, Institute of Physics, Faculty of Science and Mathematics, University of **Skopje (Macedonia)**, The Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences, **Sofia (Bulgaria)**, Department of Physics, University of **Vlora (Albania)**, Department of Theoretical Physics, Faculty of Sciences, University of **Zagreb (Croatia)**

## **Partner Institutions**

- Theoretical Physics, CERN, Geneva (Switzerland)
- The High Energy, Cosmology & Astroparticle Physics Section, ICTP, Trieste (Italy)
- String Theory Group, LMU and MPI, Munich (Germany)
- SISSA, Trieste (Italy)
- Lab 170, ITEP, Moscow (Russia)
- Department of Physics & Astronomy, The Johns Hopkins University, Baltimore (USA)
- Department of Physics, Buffalo University (USA)
- Department of Theoretical Physics (F-1), Jozef Stefan Institute, Ljubljana (Slovenia)
- Department of Physics, Faculty of Science and Mathematics, Banja Luka (Bosnia and Herzegovina)
- Particle Physics Group, Institute for Theoretical Physics, Vienna University of Technology (Austria)
- Mathematics Department, Lusofona University, Lisbon (Portugal)
- Department of Statistics, Faculty of Science, University of Warwick (UK)
- Algebraic Structures in Field Theory Group, CBPF, Rio de Janeiro (Brazil)

## The main Project partners and Patrons

### UNESCO (Paris and Venice Office)

- A total of 11 projects approved and realized
- Financial support for numerous Schools, Workshops and Seminars

### Central European Initiative (CEI)

- A total of 4 projects approved and realized
- Partner in the CERN – SEENET-MTP programs and meetings



### European Physical Society (EPS)

- One multilateral project with UNESCO, CEI, EPS and SEENET-MTP
- Partner in the CERN – SEENET-MTP PhD Training Program and numerous meetings



### ICTP

- A total of 3 projects approved and realized
- Partnership in the CERN – SEENET-MTP PhD Training Program and numerous meetings



### CERN

- CERN – SEENET-MTP Joint PhD Training Program 2015-



### DAAD (German Academic Exchange Service)

### DFG (German Research Foundation)

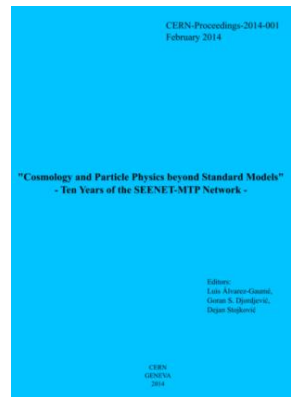
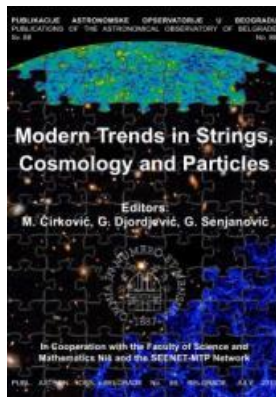
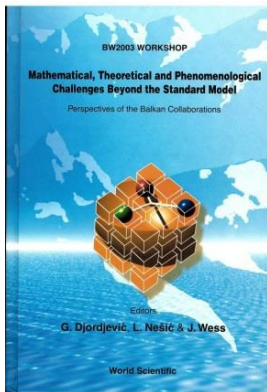
### Bavarian Ministry for Research

### Faculty of Sciences and Mathematics, University of Niš

### Serbian and Romanian Ministries for science and other national foundations

## **SEENET-MTP in Numbers**

- Full Network Nodes: 15
- Other Network Nodes: 8
- Partner Institutions: 13
- Individual Members: 450+
- Projects realized/in progress: 18+
- Network Meetings: 30
- Researcher and student exchanges: 300+
- Publications:
  - Monographs, Network Conference Proceedings: ~15
  - Joint Scientific Papers: 225+



## **Research**

In the last 15 years, a significant amount of publications resulted from the efforts and activities of the SEENET-MTP and its members. Some of the current primary research areas of interest of the scientific groups affiliated with the SEENET-MTP are:

- 1) Inflationary scenarios based on tachyon field dynamics, D-brane dynamics in the second Randall-Sundrum model (RSII), holographic cosmology (groups in Niš, Timisoara and Zagreb)
- 2) Integrable systems, solitonic solutions and Lax operators (groups in Sofia and Craiova)
- 3) Noncommutative gauge theories, noncommutative gravity (groups in Belgrade, Zagreb and Istanbul)
- 4) Casimir effect with quantized charged scalar and/or spinor matter in background magnetic field (group in Kiev)
- 5) Foundations and application of the theory of open quantum systems (groups in Bucharest and Kragujevac)
- 6) Field theory in curved spacetime, Sasaki-Einstein spaces, integrability properties of geodesic motions (groups in Bucharest and Timisoara)

The main support for research and mobility has been provided by two projects with the ICTP-OEA: the PRJ09 "*Cosmology and Strings*" and the NT03 "*Cosmology – Classical and Quantum Challenges*".

## **Training**

The Network and its nodes organized about 15 Schools in Bulgaria, Romania and Serbia.

The main training activity of the SEENET-MTP has been realized through the CERN – SEENET-MTP PhD Training Program and Agreement of Cooperation. The main part of the Program consists of a series of intense, self-connected, one-week seminars for PhD students (in exceptional, well justified cases, MSc students in the last year, as well as young postdocs, have been included). As a rule, each seminar includes lectures followed by appropriate exercises, given by 2-3 professors-specialists and 1-2 assistants. More info on:

*<http://phd.seenet-mtp.info>*

Four Schools have been organized in the period of 2015-2017:

- Supergravity, 21–27 June 2015, Belgrade (Serbia)
- Modern Aspects of Quantum Field Theory, 8–14 November 2015, Bucharest (Romania)
- Computational methods in Cosmology and General Relativity, 11–17 December 2016, Timisoara (Romania)
- New Trends in High Energy Theory, 16–20 October 2017, Sofia (Bulgaria)

The fifth School in 2018:

- The SEENET-MTP School “High Energy and Particle Physics: Theory and Phenomenology” – BS2018, 3–10 June 2018, Niš (Serbia)

## **SEENET-MTP Office and Center**

The decision to form the SEENET-MTP Office was brought by the members of the Executive Committee during the Scientific Meeting QM2005 in Niš, November 2005. The decisions that the SEENET-MTP Office with temporary headquarters in Niš grows into a permanent office and that the Executive Director of the Network is also the Director of the SEENET-MTP Office were adopted at the RC meeting during the Scientific Meeting SSSCP2009 in Belgrade, April 2009. The SEENET-MTP Office as a Division of the Faculty Center for Advanced Study in Natural and Mathematical Sciences exists since March 2011.



*Dr. Dragoljub Dimitrijević  
Scientific secretary*



*Dr. Milan Milošević  
System Administrator*

The SEENET RC decided at its meeting in Timisoara, November 2012, to explore the possibility and means of the SEENET-MTP becoming a legal entity, to represent the Network in project activities and agreements in the future. The SEENET-MTP RC decided at its meeting in Vrnjačka Banja, April 2013, to establish the SEENET-MTP Centre as the legal entity, and the EC and Niš Office were given the task of carrying out the decision. The SEENET-MTP Centre was created in 2017.

## **Outreach**

The SEENET-MTP has taken part in and supported several teacher training activities in Greece, Romania, Serbia and other countries in the region.

The Network is involved in many science popularization programs, foremost in organizing numerous public lectures and publishing suitable books and CDs for pupils, teachers and the general public.

Some of the SEENET-MTP members played a crucial part in the creation of the Specialized class for high-school students gifted in physics, in Niš, Serbia. The Class revitalized the physics community in the area and produced many quality physicists over the 15 years of its existence, many of which today work at prominent scientific institutions, both in the country and worldwide (USA, Italy, Portugal, etc).

Numerous contests and meetings for talented high-school and faculty students, as well as meetings for teachers, were organized under the auspices of UNESCO, mainly in Romania and Serbia.



*Poster regarding the 15 years of existence of the Specialized class for high-school students gifted in physics (Niš, Serbia)*



## CONTACT

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