

# Regional Training Network in Theoretical Physics

co-founders:

University of Bonn (UB)  
Tbilisi State University (TSU)  
Yerevan State University (YSU)  
University of Siegen (USi)

## Collaboration Agreement

### Mission

The **Regional Training Network in Theoretical Physics** (referred hereafter to as Network) is an international collaboration between the Universities of Bonn (UB), Tbilisi State University (TSU), Yerevan State University (YSU) and the University of Siegen (USi), each referred to as a University and together the Universities. This collaboration is co-founded by UB, TSU, YSU and USi, united in the respective nodes of the Network, and is implemented through the joint activities of all four nodes of the Network.

The **mission of the Network** is to conduct advanced education, training and supervision of Ph.D. theses for graduate students from UB, TSU, YSU and USi in accordance with the standards accepted at leading Universities worldwide. In particular, the Network implements the Common Ph.D. program based on the respective Memorandum of Understanding (signed on 14 March 2013 by UB, TSU and YSU and joined by USi on 23 September 2013).

**Network activities** shall include all activities related to Ph.D. level education: delivering a comprehensive curriculum, conducting supervised scientific research, supporting scientific exchange and student/faculty mobility between Bonn, Tbilisi, Yerevan and Siegen, sharing/presenting research results and supporting the preparation of a Ph. D. thesis. The Network shall rely on modern video-communication means in its work.

The Network shall **endeavor to engage German, Georgian and Armenian scientists** who are currently employed in leading Universities worldwide to participate in its activities as invited members.

As the principal recipient of a VolkswagenStiftung grant for the formation of a Regional Training Network in Theoretical Physics, **UB assumes responsibilities** for overseeing education, research processes and quality control, as well as for the overall Network

deployment and operations management throughout the 2.5 year funding period. After this period, the aforementioned responsibilities will be regulated by a separate agreement between the parties<sup>1</sup>.

## Organization

The Network consists of UB, TSU, YSU and USi nodes. The individual nodes may be or become part of a larger administrative entity (e.g., a faculty, or an institute within a University, or an excellence cluster), or may function in an autonomous fashion.

**Faculty members** of the nodes are scientists from the respective home Universities. The list of all faculty members of the nodes is given in appendix A. This list is not exclusive and will be updated regularly (see regulations below).

Scientists working in other German, Georgian or Armenian institutions as well as German, Georgian and Armenian scientists residing abroad may be assigned as **invited members** to one of the nodes and enjoy all privileges (in relation to the project) of the regular node members. E.g., they may deliver lecture courses/seminars, participate in the schools/workshops, co-supervise Ph.D. students. Moreover, invited members are eligible for using travel grants from the project funds, according to the conditions of the funds. They shall have a consultative voice in the general meeting of a node.

The governing body of a node is the **General Meeting (GM)**, which comprises all faculty members of the node. The General Meeting fulfills the following tasks:

- The GM decides about the admission and exclusion of faculty members and invited members, according to the majority rule.
- The GM elects the Node Coordinator on a three-year basis.
- The GM decides to which administrative entity the node belongs. Decisions in this regard are made by each node independently. All other nodes should be notified.
- The GM at TSU, YSU and USi preapproves the annual reports of the nodes.

The **Node Coordinator** is responsible for the management of the daily activities of the node. The UB node is, at the same time, responsible for the overall management of the project. The UB Node Coordinator is also the coordinator of the whole project (project coordinator).

The coordinators of all four nodes form the **Network Steering Committee (NSC)**. The Network Steering Committee fulfills the following tasks:

- The NSC decides on the final acceptance of students in the Common Doctoral Program after their recommendation through the Common Program Committee (see Memorandum of Understanding from 14 March 2013).
- The NSC decides on the acceptance of students in the Network following their application and recommendation through the pertinent node coordinator.
- The NSC solves all issues not covered by this bylaw.

---

<sup>1</sup> USi has joined the Network after the application was approved by VolkswagenStiftung. It does not get a part of funding during this funding period. USi will participate in all future activities and grant applications on equal footing with other nodes.

## Accountability

The coordinators of TSU, YSU and USi nodes once in a year submit a **detailed report** to the project coordinator, who is also the coordinator of the UB node. The reports must be pre-approved by the general meeting of the respective node.

The report must include:

1. list of scientific achievements, documented in scientific publications and conference reports,
2. list of the visits, performed by the members of a given node, including Ph.D. students visits,
3. list of the lectures delivered within the Network,
4. information about the supervision of Ph.D. students that are enrolled in the Common Doctoral Program,
5. information about the workshops and schools, organized under the supervision of the Network,
6. a detailed financial report.

On the basis of these reports the project coordinator prepares an overall annual report and makes it available to all members of the Network. This report shall also be submitted to the funding agencies.

## Admission and Programme

Apart from the **students** enrolled into the common Ph.D. program (see Memorandum of Understanding from 14 March 2013), other students may be accepted in the Network. In difference to the former, the latter may not have co-supervisors at different Universities, and are not required to obey the minimum residency requirements.

As a rule, only students regularly enrolled in relevant Ph.D. programs at their respective Universities may participate in the program of the Network. This applies to UB, TSU, YSU and USi, as well as other Universities or research centers in exceptional cases. In the latter case, the acceptance of a student is possible with an explicit written agreement between the respective University or research center and the Network University proposing the inclusion of the student. These students enjoy the advantages of a program participant of the respective node, to which he/she is associated as a result of this agreement (referred hereafter to a home node).

Although the program is intended primarily for graduate students working on their Ph.D. degree, as an exception from the above rule, students with distinguished academic standing and working on their master degree can be enrolled and enjoy advantages of a program

participant.

Ph.D. students apply for admission to the Network and are recommended to NSC by the pertinent node coordinator. In order to participate in the Common Ph.D. program, Ph.D. students are recommended to the NSC by the Common Program Committee (see Memorandum of Understanding from 14 March 2013). Accepted students will receive a letter of acceptance to which she/he has to reply in written form within the given deadline.

The home node of a student is fully responsible for his/her performance tracking and monitoring.

Ph.D. students have to fulfill **non-course requirements** in their home Universities or research centers.

Moreover, the network offers an **academic curriculum** consisting of the following formats:

- scientific workshops in Germany, Georgia and Armenia
- research schools for young academics
- lecture courses (see Appendix B; the list given here is not final and will be updated regularly)
- short exchange visits of young academics between UB, TSU, YSU and USi
- for the participants of the Common Ph.D. Program: long-term visits to their guest institutions
- supervision and co-supervision of the research carried out during working on the Ph.D. theses
- student seminars,
- etc.

Video transmission of the lecture courses and seminars will be a common practice for cost reduction purposes.

A student, involved in the program and getting his/her Ph.D. degree at one of the Universities or the research centers, gets in addition the **certificate** of the Regional Training Network, confirming the participation in the program. The certificate is written in English.

**Coordinator of the Regional Training Center in Theoretical Physics,  
Coordinator of the UB node:**

**Prof. Dr. Ulf-G. Meißner**

Dean of the Faculty of Mathematics and Natural Sciences,

University of Bonn, Bonn, Germany  
Date: 23/09/2013

**Coordinator of the TSU node:**

**Dr. Mirian Tabidze**

Head of the Laboratory for Modeling and Data Analysis,  
Faculty of Exact and Natural Sciences, Physics Department,  
Tbilisi State University, Tbilisi, Georgia  
Date: 23/09/2013

**Coordinator of the YSU node:**

**Dr. Armen Nersessian**

Leading Researcher, Laboratory of Theoretical Physics,  
Yerevan State University, Yerevan, Armenia  
Date: 23/09/2013

**Coordinator of the USi node:**

**Prof. Dr. Thomas Mannel**

Faculty of Natural and Technical Sciences  
University of Siegen, Siegen, Germany  
Date: 23/09/2013

# Appendix A

## List of the scientists, involved in the project of the Regional Center in Theoretical Physics (September 2013)

### UB node:

Ulf-G. Meißner, HISKP, UB (project coordinator)  
Akaki Rusetsky, HISKP, UB

### TSU node:

Merab Eliashvili, TSU  
Merab Gogberashvili, TSU  
Anzor Khelashvili, High Energy Physics Institute, TSU  
Tamaz Mdzinarashvili, TSU  
Mirian Tabidze, TSU (node coordinator)  
George Tsitsishvili, TSU

### YSU node:

Armen Allahverdian, YerPhi  
Tigran Hakobyan, YSU  
David Karakhanian, YerPhi and YSU  
Yevgeniy Mamasakhlisov, YSU  
Armen Nersessian, YSU (node coordinator)  
Vadim Ohanyan, YSU  
Gor Sarkissian, YSU

### US node:

Thomas Mannel, USi (node coordinator)  
Alexander Khodjamirian, USi

# Appendix B

## Proposed Lecture Courses

### YSU:

- 1) A. Allahverdyan, Statistical Mechanics of Small Systems (2nd Year)
- 2) T. Hakobyan, V. Ohanyan, Introduction to Integrable Systems in Statistical Mechanics and Their Application in Quantum Field Theory (3rd Year)
- 3) T Hakobyan, Physical Applications of Group Theory (2nd Year)
- 4) D. Kharakhanyan, Theory of Integrable Systems and Their Application (3rd Year)
- 5) E. Mamasakhlisov, Statistical Physics and Thermodynamics of Macromolecules (1nd Year)
- 6) A. Nersessian, Geometrical Aspects of Hamiltonian Mechanics (1nd Year)
- 7) G. Sarkissian, Elements of Topology and Differential Geometry (2nd Year)

### TSU:

- 1) G. Jorjadze, Lectures of Integrable Models in Field/String Theory (2nd Year)
- 2) M. Eliashvili, Quantum Fields and Low Dimensional Physical Systems (1nd Year)
- 3) M. Gogberashvili, Gravitation, Cosmology and Astroparticle Physics (1nd Year)
- 4) G. Devidze (I semester) and
- 5) Z. Tavartkiladze (II semester), The Methods of Quantum Field Theory: Particle Physics of Standard Model and Beyond; Intersection with Cosmology (1nd Year)
- 6) T. Mdzinarashvili, Physical Methods in Biology (1nd Year)
- 7) A. Khelashvili, Topological Objects in Field Theory (2nd Year)
- 8) M. Tabidze, Modeling and Data analysis in Physics (2nd Year)

### BU:

- 1) A. Rusetsky, QCD (1st year)
- 2) A. Rusetsky, Effective Field Theories (2nd year)
- 3) A. Rusetsky, Field Theory on the Lattice (3rd year)

### US:

**xxx**