

## **Workshop Program**

**GGSWBS'12 (August 6 – 10), Tbilisi, Georgia**

*5<sup>th</sup> Georgian – German School and Workshop in Basic Science*

### **Topics:**

1. Existing and Future Physics Projects at Large-Scale Facilities: COSY, FAIR, and LHC
2. Search for Electric Dipole Moments (EDMs) at Storage Rings
3. Solid State Physics and Materials Science
4. Bio- and GeoScience
5. Engineering Science
6. Neuroscience and Medicine
7. Information Technology and Advanced Computing

### **Location of the meeting:**

**Day 1, 2: Ivane Javakhishvili Tbilisi State University (TSU)**

**Day 3: Social Program (Excursion)**

**Day 4, 5: Georgian Technical University (GTU)**

August 6, Monday (TSU) 10<sup>00</sup> - 18<sup>30</sup>

## Existing and Future Cooperation

### Plenary session I (10:00 – 13:30)

- Welcome – **Alexander Kvitashvili**, Rector of TSU  
– **Sulkhan Sisauri**, Director General of SRNSF  
– **Hans Ströher** (FZJ) - „*Scope of the Workshop*“

#### *Projects and Prospects in Basic Science (Overviews)*

- **Hans Ströher** (FZJ) – „*From Hadron Physics to the Precision Frontier*“
- **Rudolf Maier** (FZJ) – „*The FAIR Project at Darmstadt*“
- **Farida Grinberg** (FZJ) – „*Institute of Neuroscience and Medicine: Medical Imaging Physics*“

12:00 – 12:30 Coffee break

- **Giorgi Ghvedashvili** (TSU) – „*Overview of scientific activity at TSU*“
- **Alexander Shengelaya** (TSU) – „*Condensed Matter Physics and Materials Science at TSU: Past, Present and Future Perspectives*“

13:30 – 15:00 Lunch break

#### *Georgian ↔ German Cooperation Examples (International, GEO-local, GEO-abroad)*

### **Parallel session 1 (Topic 1 and 2): Convener – Mikheil Nioradze (15:00 – 18:30)**

- **Gela Devidze** (HEPI TSU) – „*Beyond of Standard Model*“
- **Tamar Jobava** (HEPI TSU) – „*ATLAS Experiment and Georgian Contributions*“
- **David Chiladze** (FZJ/TSU) – „*Overview of NN-Scattering Study at ANKE/COSY*“
- **David Mchedlishvili** (FZJ/TSU) – „*The pn-system Study at Internal ANKE Experiment*“
- **Mirian Tabidze** (HEPI TSU) – „*The PAX project and HEPI TSU Contribution*“

16:30 – 17:00 Coffee break

- **Alexander Nass** (FZJ) – „*Instrumentation for PAX Experiment at COSY*“
- **Andrea Pesce** (FZJ/Ferrara) – „*Spin Dynamics Studies in Storage Rings*“
- **Greta Guidoboni** (FZJ/Ferrara) – „*EDM Study at COSY: Spin Coherence Time*“
- **Irakli Keshelashvili** (Basel Uni) – „*Experiments at Electron Accelerators*“

### **Parallel session 2 (Topic 3, 4, and 7): Conveners – Shengelaya / Botchorishvili (15:00 – 18:30)**

- **Manuel Angst** (FZJ) – „*Multiferroicity from charge ordering ? A case study*“
- **Yves Dumont** (Versailles Uni) – „*Magnetic oxide Fe<sub>2-x</sub>Ti<sub>x</sub>O<sub>3-d</sub> as spintronics material*“
- **Ekaterina Chikoidze** (Ver. Uni) – „*Oxides for electronics: problem of electrical transport*“
- **Tamar Chelidze** (TSU) – „*Electric field-induced emission intensity modulation in ...*“
- **Zurab Guguchia** (Zürich Uni/TSU) – „*Effect of pressure on stripes formation in cuprates*“

16:30 – 17:00 Coffee break

- **Nodar Tsvitivadze** (TSU) – „*Preventive methods for Georgian sea coast erosion*“
- **Ketevan Kasradze** (TSU) – „*4D-var assimilation of CRISTA-NF H<sub>2</sub>O and MLS retrievals with the high resolution SACADA system*“
- **Giorgi Burjanadze** (TSU) – „*Long-lasting stress, quantitative changes in nitric oxide ...*“
- **Giorgi Mosidze** (TSU) – „*The influence of protein complex derived from adult rat brain ..*“
- **Liana Ramishvili et al.**, (TSU) – „*Prostate cancer epithelial cells and the changes ...*“

19<sup>30</sup> - 22<sup>00</sup>

Social program (dinner)

August 7, Tuesday (TSU) 9<sup>30</sup> - 18<sup>30</sup>

*Projects and Prospects in Basic Science (Overviews)*

**Plenary session II (09:30 – 13:00)**

- **Raphael Hermann** (FZJ) – „Lattice Dynamics in Functional Materials at the Jülich Centre for Neutron Science“
- **Paolo Lenisa** (Ferrara Uni) – „Polarized Antiprotons: Why and How ? “
- **Yuri Valdau** (Bonn Uni/FZJ) – „Time Reversal Invariance Experiment at COSY“

11:00 – 11:30 Coffee break

- **Alexander Gamkrelidze** (TSU) – „Algorithms and Data Structures for Low Dimensional Topology “
- **Mariam Elizbarashvili** (Ilia Uni) – „Projected Climate Change Influence on Vine Agroecosystems (example of Kakheti) “

13:00 – 14:30 Lunch break

*Student Presentations of Ongoing and Future Activities*

**Plenary (students) session III: Convener – Alexander Shengelaya (TSU) (14:30 – 18:30)**

- **Manuchar Gvaramia** (PhD TSU) – „Investigation of structure of matter confined ...“
- **Giorgi Khazaradze** (Magister TSU) – „Synthesis and magnetic properties ... „
- **Zara Bagdasarian** (Magister TSU) – „Spin filtering experiment at COSY“
- **Tinatin Bukia** (PhD TSU) – „Synthesis and properties of adamantane ... „
- **Jarji Khmaladze** (Magister TSU) – „ZnO nanodots and nanowires“

16:30 – 16:50 Coffee break

- **Giorgi Gambashidze** (Magister TSU) – „Effect of pressure on stripes ...“
- **Konstantin Muradov** (Magister TSU) – „Very large data base management ...“
- **Bagrat Kikvadze** (PhD TSU) – „Regional climate model and ...“
- **M. Doliashvili, N. Nebulishvili, G. Rukhaia, L. Tarielashvili,** (Bachelor students, TSU) – „Cubed sphere simulator“
- **G. Bakradze, K. Natobaidze, T. Aslanishvili, N. Chumbadze, N. Qozashvili, B. Tsutskhvashvili** (Bachelor students, TSU) – „Icosahedral mesh simulator“
- **Ketevan Museridze** (Bachelor TSU) – „Determination of metal concentrations in surface waters and soils using atomic absorption spectrometer“

19<sup>00</sup> - 21<sup>30</sup>

Social program at TSU (concert organized jointly by TSU and GTU)

August 9, Thursday (GTU) 10<sup>00</sup> – 18<sup>00</sup>

## Existing and Future Cooperation

### Plenary session IV (10:00 – 13:30)

- Welcome – Archil Prangishvili, Rector of GTU  
– Nodar Surguladze, Deputy Minister of Education and Science  
– Hans Ströher (FZ Jülich)

#### *Projects and Prospects in Basic Science (Overviews)*

- Archil Prangishvili (GTU) – „Trends in Georgian Engineering Developments“
- Jorg Wolters (FZJ) – „Projects at Central Institute of Technology (ZAT)“
- Helmut Soltner (FZJ) – „Selected Development Projects at ZAT“

12:00 – 12:30 Coffee break

- Detlev Gotta (FZJ) – „Exotic Atoms: The Quests for Experiment“
- Ralf Schleichert (FZJ) – „Silicon Detectors for Particle Physics“

13:30 – 15:00 Lunch break

#### *Georgian ↔ German Cooperation Examples (International, GEO-local, GEO-abroad)*

### **Parallel session 3 (Topic 3 and 4): Convener – Elguja Kutelia (15:00 – 18:00)**

- Olga Tsursumia (GTU) – „Development of new coating materials for efficient and clean...“
- Lili Nadaraia (GTU) – „Producing nanocrystalline composite materials via spark ...“
- Ilhan Engin (FZJ) – „High intensity lasers for particle physics“

16:00 – 16:30 Coffee break

- Christian Weidemann (FZJ) – „Spin-Filtering experiments: technical challenges“
- Martin Gaisser (FZJ) – „Optimization of atomic beam sources for polarization experiments“
- Sergo Petrosian (Magister Ilia) – „Study of nanostructured layers using ...“
- Vitali Gogiberidze (Magister Ilia) – „Investigation of nanostructured layers ...“

### **Parallel session 4 (Topic 5 and 7): Convener – David Tavkheldize (15:00 – 18:00)**

- Revaz Tedoradze (GTU) – „Increasing of the productivity of auto trucks for the Georgian road traffics increasing of the productivity of auto trucks for the Georgian road traffics“
- Maguli Bedineishvili (GTU) – „Biometrics myths and reality“
- Giorgi Tsinamdzgvrvishvili (Magister GTU) – „Traffic organization to improve the city road network, traffic flows and improve the ecological safety of the roads“

16:00 – 16:30 Coffee break

- Giorgi Dzeladze (Bachelor GTU) – „"Variations" on the programming topic“
- Tinatin Goreziani (Bachelor GTU) – „To improve the railway sorting station train schemes and work technology“
- Avtandil Danelia (Bachelor GTU) – „Rolling stock using an effective way“
- David Getsadze (Bachelor GTU) – „Modern bridge management system“
- Giorgi Darsalia (Bachelor GTU) – „Geo railway: management problems and solutions“
- Vakhtang Tkeshelashvili (Bachelor GTU) – „Status and perspective for Georgian ports“
- Natia Kupradze (Bachelor GTU) – „Credit problems in banking business in Georgia“
- Avtandil Danelia (Bachelor GTU) – „Roling stick using an effective way“
- Giorgi Sivsivadze (Bachelor GTU) – „Efficient use of working capital“

- **David Getsadze** (Bachelor GTU) – “Modern bridge management” system“
- **David Chafodze** (Bachelor GTU) ) – “Developing constructions for drying processes“
- **Mariam Melkadze** (Bachelor GTU) – “Making Technology of red paint“

19<sup>30</sup> - 22<sup>30</sup>

**Social program** (*Banquet of Workshop*)

August 10, Friday (GTU) 9<sup>30</sup> - 18<sup>30</sup>

*Projects and Prospects in Basic Science (Overviews)*

**Plenary session V** (09:30 – 13:30)

- **Andreas Wahner** (FZJ) – „Institute of Energy and Climate Research (IEK)“
- **Hendrik Elbern** (Cologne/FZJ) – „Numerical Simulations of Atmospheric Compounds“
- **Manuel Angst** (FZJ) – „Complex Ordering Phenomena in Multifunctional Oxides at the Peter Grünberg Institute.“

11:00 – 11:30 Coffee break

- **Sayavur Bakhtiarov** (USA) – „Mars Science Laboratory Mission: Safety Review“
- **David Tavkhelidze** (GTU) – „The Prospects of Developments of Mechanical Engineering Specialities at GTU“
- **Ramaz Botchorishvili** (TSU) – „Partial Differential Equations for Data Compression and Encryption“

13:00 – 14:30 Lunch break

*Student Presentations of Ongoing and Future Activities*

**Plenary (students) session VI: Convener – Ketevan Kotetishvili (GTU) (14:30 – 18:30)**

- **Malkhaz Jabua** (PhD, GTU) – „Readout upgrade for the local plane detector of Jülich ...“
- **Sergo Samkharadze** (PhD, GTU) – „Research and optimization of the processes of ...“
- **Mariam Razmadze** (PhD, GTU) – „Kinematic and dynamic analysis of multi-link ...“
- **Giorgi Kukhalashvili** (Magister GTU) – „The core-shell type carbon magnetic nano- ...“
- **Vladimir Samkharadze** (Magister GTU) – „Fabrication of NdSd and Nd5Sb3 plates their ..“
- **Tamar Leshkashvili** (Magister GTU) – „Investigation of plasma anodized silica plates“
- **Levan Khutsaidze** (Magister GTU) – “Partitioned systems of the monitoring and control”

16:30 – 16:50 Coffee break

- **Mikheil Kelendjiradze** (Bachelor-2) – „Quantum Therapy“
- **Dito Shergelashvili** (Bachelor-2) – „Nitrat Noxometry“
- **Vladimer Tvaliashvili** (Bachelor-2) – „Investigation of RC circuit“
- **David Khutsishvili** (Bachelor-2) – „Device for Investigation of Coulumb Low“
- **Beqa Buadze** (Bachelor-2) – „Device for Investigation of Coulumb Low“
- **Tamar Khechiashvili** (Bachelor-2) – „Fullerence as Carbon allotropically alteration“
- **Valerian Khutsishvili** (Bachelor-2) – „Radiation effect on living body“
- **Giorgi Baiadze** (Bachelor-2) – „Tailoring of Si doping layers ...“
- **Teona Gvadzabia** (Bachelor-3) – „Can we transfer info by light speed protons ? “
- **Tengiz Kardava** (Bachelor-3) – „Triplet emmitters for OLEDs “

Concluding remarks:

- ♣ Germany – Hans Ströher (FZJ)
- ♣ Georgia – David Tavkhelidze (GTU), Ramaz Botchorishvili (TSU)

End of Workshop

19<sup>00</sup> - 22<sup>00</sup>

**Social program** (free day/ tour in city)

