

**DAAD** Deutscher Akademischer Austausch Dienst  
German Academic Exchange Service



RUSSIAN UNION OF  
YOUNG SCIENTISTS

**DFG** Deutsche  
Forschungsgemeinschaft



# The Third German-Russian Week of the Young Researcher

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## “Aviation and Space”

Novosibirsk  
September 23-27, 2013

Deutsches Wissenschafts- und  
Innovationshaus – Moskau



Deutschland  
Land der Ideen



Auswärtiges Amt



### **Conference Hotel**

Congress Hotel "Novosibirsk"

Vokzalnaya magistral, 1  
630004, Novosibirsk, Russia

Tel: +7 (383) 364 01 01, +7 (383) 364 02 13

### **Conference Location**

#### **Novosibirsk State Technical University**

Prospekt K. Marksa, 20,  
630073, Novosibirsk, Russia

#### **Institute of Theoretical and Applied Mechanics**

Institutskaya str., 4/1  
630090, Novosibirsk, Russia

Dear Colleagues from Russia and Germany,

## **Welcome to the Second “Week of the Young Researcher”!**

Two years ago on the occasion of the “German-Russian Year of Science” the idea was born to invite young researchers from both countries to come together and to discuss current topics of mutual interest. After the great success of the first week in Kazan it was decided to turn it into an annual event. Last year we met in Ekaterinburg and this year we welcome you in Novosibirsk. Our main goal this week is to foster collaboration among young scientists and researchers who not so long from now will be setting the course of scientific cooperation between Russia and Germany.

Research organizations and institutions of higher education of both our countries will this week introduce their funding programmes and showcase the platforms that they can offer, to Russian and German PhD students and Post Docs who wish to initiate collaborative projects or broader research networks.

We have chosen Novosibirsk as the venue for this week with good reason, for it is one of most important scientific centres in Russia. Being the “Capital of Siberia” Novosibirsk is the core of a regional research and innovation cluster. Akademgorodok is host to the Presidium of the Siberian Branch of the Russian Academy of Sciences and is an internationally renowned research facility far beyond its borders. Also numerous universities and institutes have long been involved in aerospace engineering in strong cooperation with German institutions.

We would like to express our gratitude to Novosibirsk State Technical University (NSTU) and the Institute of Theoretical and Applied Mechanics (ITAM) for its academic hospitality, to the Presidium of the Siberian Branch of the Russian Academy of Sciences and the Consulate General of Germany in Novosibirsk for its support, as well as to the Council of the Russian Union of Young Scientists (RoSMU). And of course we thank all of you, the participants, for their involvement in this conference.

**СПАСИБО ВАМ!**

Dr. Gregor Berghorn



German Academic Exchange Service  
Head of DAAD Office Moscow  
Managing Director of DWIH Moscow

Dr. Jörn Achterberg



German Research Foundation  
Head of DFG Office Moscow  
Deputy Director of DWIH Moscow

<b>September 22, Sunday</b>
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13:00	Light Lunch	<i>Hotel Novosibirsk, Breakfast Hall</i>
14:00- 18:00	Sightseeing Tour	
19:00	<b>Words of Welcome</b> to the participants of the week by <ul style="list-style-type: none"><li>• Dr. Gregor BERGHORN, DAAD Moscow</li><li>• Dr. Jörn ACHTERBERG, DFG Moscow</li><li>• Dr. Aleksandr SHCHEGLOV, Chairman of the Council of the Russian Union of Young Scientists (ROSMU)</li></ul>	<i>Welcome Party at Hotel Novosibirsk, Breakfast Hall</i>

<b>September 23, Monday</b>
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09:30	Transfer to the University	<i>from Hotel Novosibirsk</i>
10:00	Registration of Participants	<i>Novosibirsk State Technical University (NSTU)</i>
11:00	<b>Official Opening of the Week</b> with welcome addresses by <ul style="list-style-type: none"><li>• Prof. Dr. Nikolai PUSTOVOI Novosibirsk State Technical University</li><li>• Academician Prof. Aleksandr ASEEV Chairman of Siberian Branch of Russian Academy of Sciences(SB RAS)</li><li>• Prof. Dr. Mikhail FEDORUK Rector of Novosibirsk State University</li><li>• Neithart HÖFER-WISSING Consul General of the Federal Republic of Germany in Novosibirsk</li><li>• Prof. Dr. Peter FUNKE Vice-President of the DFG</li><li>• Dr. Aleksandr SHCHEGLOV Chairman of the Council of the Russian Union of Young Scientists (ROSMU)</li></ul>	<i>AktovyjZal</i>

12:00	<p><b>Simulation of Cooled Scramjet Flows</b></p> <p>Prof. Dr.-Ing. Wolfgang SCHRÖDER Institute of Aerodynamics (AIA) RWTH Aachen University</p> <p>- Discussion –</p>	
13:00	Lunch	<i>Dining Hall</i>
14:00	<p>Introductory remarks to “The Third German-Russian Week of the Young Researcher”</p> <ul style="list-style-type: none"> <li>• Prof. Dr. Peter FUNKE Vice-President of the DFG</li> </ul>	<i>Conference Hall, NSTU</i>
14:30	<p><b>Presentation of Novosibirsk State Technical University (NSTU)</b></p> <p>Prof. Dr. Evgeny TSOI Vice-Rector for International Affairs, NSTU</p>	
15:00	<p><b>Model-Based Systems Design For Safety Critical Systems</b></p> <p>Prof. Dr. techn. Klaus JANSCHKEK Chair of Automation Engineering, Dresden University of Technology</p> <p>- Discussion -</p>	
16:00	Coffee Break	
16:30	<p><b>Short Lectures of Young Researchers</b></p> <p>Chair:</p> <ul style="list-style-type: none"> <li>• Prof. Dr.-Ing. Wolfgang SCHRÖDER RWTH Aachen University</li> <li>• Prof. Dr. techn. Klaus JANSCHKEK Dresden University of Technology</li> </ul> <p>MAKAROV, Valery: “The Concept of the Automated System of Forecasting and Preventing Flight Accidents”</p> <p>SONNENBURG, Arne: “Vision Based Estimation And 3D Reconstruction For Rendezvous Navigation Relative To An Unknown And Uncooperative Target Spacecraft”</p> <p>KLIX, Michael /PFANNE, Martin: “Adaptive Federative 3d Exploration with Multi Robot Systems”</p>	

KONDAKOV, Ivan: "Development of Pro-Composite Fuselage Structures for Perspective Airlines"

IGNATYEV, Dmitry: "Modeling of Nonlinear Unsteady Aerodynamics of Aircraft at High Angles of Attack Using Recurrent Neural Networks"

RASHIDOV, Arseny: „Software Tool for Error Propagation Analysis"

18:00 Transfer to the Hotel

19:30 **Evening Reception by DWIH and the German Consulate General** *Hotel Novosibirsk Banquet Hall*

<b>September 24, Tuesday</b>
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09:00 Transfer to Akademgorodok *from Hotel Novosibirsk*

10:00 **Presentation of Akademgorodok** *Akademgorodok Dom Uchenych MalyjZal*  
Academician Prof. Vasily FOMIN  
Deputy Chairman of Siberian Branch of Russian Academy of Sciences (SB RAS)

10:30 **Presentation of Novosibirsk State University**  
Prof. Dr. Sergey NETESOV  
Vice-Rector for International Affairs, NSU

11:00 **Presentation of the Institute of Theoretical and Applied Mechanics (ITAM)**  
Academician Prof. Vasily FOMIN  
Director of ITAM

11:30 Coffee Break

11:45 **Aero-thermodynamic Design Of A Scramjet Propulsion System – Research Training Group GRK 1095**  
  
Dr.-Ing. Uwe GAISBAUER  
Institute of Aerodynamics and Gas Dynamics (IAG),  
University of Stuttgart

12:30 **Short Lectures of Young Researchers from Research Training Group GRK 1095**  
  
SCHEUERMANN, Tobias /DRÖSKE, Nils / VELLARAMKALAYIL, Jiby: "Supersonic Combustion in a Scramjet Engine"

13:00	<p><b>Laminar-Turbulent Transition Control of Hypersonic Boundary Layers by Passive Porous Coatings</b></p> <p>Dr. Aleksandr SHIPLYUK Institute of Theoretical and Applied Mechanics (ITAM)</p>	
13:30	<p><b>Supersonic Boundary Layer Transition: Instability Mechanisms and Control</b></p> <p>Prof. Aleksandr KOSINOV Institute of Theoretical and Applied Mechanics (ITAM)</p>	
14:00	Lunch	<i>Dom Uchenych Dining Hall</i>
15:00	<p><b>Poster Session of Young Researchers</b> Chair:</p> <ul style="list-style-type: none"> <li>• Dr.-Ing. Uwe GAISBAUER University of Stuttgart</li> <li>• Dr. Aleksandr SHIPLYUK Institute of Theoretical and Applied Mechanics</li> </ul> <p>SHOEV, Georgy: “Numerical Study of Shock Waves Interaction at Irregular Reflection in Steady Gas Flows”</p> <p>MISHCHENKO, Dmitry: “Excitation and Evolution of Goertler Instability Modes in Boundary-layer Flows”</p> <p>ALEKSEEV, Anton: “Experimental Research of Thermal Stability of Heat-Resistant Materials”</p> <p>YADRENKIN, Mikhail: “MHD-Control of a Shock-Wave Structure Generated by the Flat Plate”</p> <p>KIRILLOVSKY, Stas: “Numerical Simulation of Nonequilibrium Flow over a Plate in Aerodynamic Tunnel”</p> <p>POLIVANOV, Pavel: “Effect of the Local Wall Cooling/Heating on the Hypersonic Boundary Layer Stability and Transition”</p>	<i>Dom Uchenych</i>
15:45	<p><b>Transfer to and Visit of ITAM</b> Institute of Theoretical and Applied Mechanics (ITAM)</p>	
17:30	Transfer to Hotel	
18:15	Dinner	
20:00	<p>Cultural Programme Bowling Night at “Vesyolaya keglya”</p>	<i>Vokzalnaya magistral, 15</i>





14:00      **Simulation of Flow about Aircrafts in Transonic Wind Tunnels**

Prof. Dr. Vadim LEBIGA  
Chair of Aerodynamics, NSTU,  
International Centre of Aerophysical Research,  
Institute of Theoretical and Applied Mechanics

- *Discussion* –

15:00      Coffee Break

15:15      **Short Lectures of Young Researchers**

Chair:

- Prof. Dr.-Ing. Martin OBERLACK  
Darmstadt University of Technology
- Prof. Dr. Vadim LEBIGA  
NSTU and ITAM

PAKHOMOV, Maksim: “Numerical Modelling of Flow Patterns, Turbulence Modification and Heat Transfer in Droplet-laden Flow in a Separated Subsonic Flow”

ZVERKOV, Ilya: “Aerodynamic Performance Improvement of MAV Wings by Streamwise Structuring of Boundary Layer”

WACLAWCZYK, Marta: “Description and Modelling of Turbulence as a Stochastic Field”

KLEMM, David: “Numerical Simulation”

HAGEBÖCK, Stephan: “Search for the Higgs-Boson with ATLAS”

PONIAEV, Sergey: “Blackout Mitigation in a Plasma Layer Near a High-speed Body in ExB Fields”

NIGMATZYANOV, Vladislav: “Simulation of Working Processes in Gas-discharge Chamber of High-frequency Ion Engine”

DESYATNIK, Pavel: “Criterion to Select Optimum Directional Control Sensitivity for Modern Transport Aircraft”

SHIRYAEVA, Anna: “Technology and Code for Numerical Simulation of Different Combustion Types in High-speed Viscous Gas Turbulent Flows”

ANISIMOV, Kirill: "CFD Application for Engine Aerodynamic Design"

OKOROKOVA, Nadezhda: "Hydronic Chemical Current Source as a Controlled Hydrogen Generator for Power Plants Based on Oxygen-hydrogen Fuel Cells"

BATRAKOV, Andrey: "Simulation flow around helicopter layout elements"

17:30 Transfer to Hotel

18:00 Dinner

19:00 Workshop of the German-Russian Forum:  
"Science Slam"

*Hotel Novosibirsk  
Conference Room  
"Nizhnyj  
Novgorod"*

Sandra HOLST,  
Project Coordination "Science Slam", Berlin

<b>September 26, Thursday</b>
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08:45 Transfer to the University

*from Hotel*

09:30 **DAAD – Deutscher Akademischer Austauschdienst /**  
German Academic Exchange Service

*NSTU  
Conference Hall*

Dr. Gregor BERGHORN  
Head of DAAD-Office in Moscow

10:00 **Alexander von Humboldt-Foundation**

Prof. Dr. Andrey MOROZOV  
Sobolev Institute of Mathematics, RAS, Novosibirsk

10:30 **DFG - Deutsche Forschungsgemeinschaft /**  
German Research Foundation

"Fostering German-Russian Cooperation"  
Dr. Jörn ACHTERBERG, DFG-Office Russia/CIS

10:45 "Promoting Research Careers"  
Dr. Jürgen BREITKOPF  
Group of Research Careers, DFG Bonn

11:30 Coffee Break

11:45 DFG - Funding Engineering Sciences in Germany  
Dr. Michael LENTZE  
Group of Engineering Sciences, DFG Bonn

12:30	Lunch	<i>Dining Hall</i>
13:30	<p><b>Presentation of the German Aerospace Center of the Helmholtz Association</b></p> <p><b>Future Short and Medium Range Aircraft Configurations</b></p> <p>Dipl.-Ing. Jörg FUCHTE Deutsches Zentrum für Luft- und Raumfahrt (DLR)</p> <p>- <i>Discussion</i> -</p>	
14:30	<p><b>Presentation of Novosibirsk State University of Architecture and Civil Engineering (Sibstrin)</b></p> <p><b>Autodyn &amp; Fluent Solvers for Calculating Blast Pressure Wave Propagation</b></p> <p>Dr. Julia ZAKHAROVA Sibstrin University</p> <p>Co-Lecturers: VALGER, Svetlana /DANILOV, Maksim</p> <p>- <i>Discussion</i> -</p>	
15:30	Coffee Break	
15:45	<p><b>Short Lectures of Young Researchers</b></p> <p>Chair:</p> <ul style="list-style-type: none"> <li>• Dipl.-Ing. Jörg FUCHTE German Aerospace Center</li> <li>• Dr. Julia ZAKHAROVA Sibstrin University</li> </ul> <p>VAFIN, Ruslan: "Improving operational characteristics of gas turbine engines parts by intensifying nitriding in a glow discharge"</p> <p>RYBIN, Andrey: "Solving different dynamic problems using same mass-stiffness aircraft model"</p> <p>KHASANOV, Azat: "Electrochemical Dimensional Machining of Nanostructures and Coarse-grained Analogues, Corrosion and Corrosion Protection"</p> <p>GOTSELYUK, Tatyana: "Computational and experimental analysis of strength of bolted composite joints in airframes"</p>	

CIAMPA, Pier: "Design and Optimization of Unconventional Aircraft Configurations in a Distributed Design Environment"

16:30 Transfer to Hotel

17:00 Dinner *Hotel Novosibirsk*

17:45 Walk to the Theatre

18:30 Ballet "Swan Lake"  
Novosibirsk State Theatre of Opera and Ballet

**September 27,  
Friday**

08:45 Transfer to the University

09:30 **Early German-Russian Scramjet  
Technology Development (1993-1995)** *NSTU  
Conference Hall*

Prof. Dr. Rainer WALTHER  
MTU Aero Engines AG, Munich

10:30 **Using Virtual Reality Methods for Space Simulators**

Dr. Stas KUZIKOVSKY  
Institute of Automation and Electrometry, Novosibirsk,  
Corporation "SoftLab-NSK"

11:30 Coffee Break

11:45 **Short Lectures of Young Researchers (6)**

Chair:

- Prof. Dr. Rainer WALTHER  
MTU Aero Engines AG
- Dr. Stas KUZIKOVSKY,  
Institute of Automation and Electrometry,

SOKOLENKO, Igor: "Development of New Radiation Protective Polymeric Composition Material of Space Type"

CHERKASHINA, Natalya: "Effect of Vacuum Ultraviolet to the Thermostatic Properties of Polystyrene Composites"

BOBIN, Konstantin / ZHELOBKOV, Vladimir:  
"The Application Experience of Superplasticity and Creepage Effects for Aircraft Components Production Made of Sheet Metal and Plates"

RYNGACH, Nikolay: "Pulse Magnetic Forming"

MORZHUKHINA, Alyona: "Heat and Mass Transfer in Space Flight Condition"

VAZHDAEV, Konstantin: "Errors of Acoustooptic Displacement Transducers of Information Measuring Systems"

13:00 Lunch *Dining Hall*

14:00 **Planning International Scientific Careers - Best Practice from Freie Universität Berlin**

Tobias STÜDEMANN, Head of the Liaison Office of Freie Universität Berlin, Moscow

15:00 Panel Discussion  
**"Prospects for Young Researchers: What can be expected of Research Organizations?"**

Invited panelists: Young Russian and German Researchers, Representatives of DAAD and DFG

Chair:  
Tobias STÜDEMANN,  
Head of the Liaison Office of Freie Universität Berlin, Moscow

Konstantin VAZHDAEV,  
Chairman of the Council of Young Scientists of the Republic of Bashkortostan, Ufa

16:00 **Closing remarks**

Dr. Gregor BERGHORN,  
Managing Director DWIH Moscow

16:30 **Technical questions**  
Departure of Participants and Transfer to Hotel

18:00 Dinner