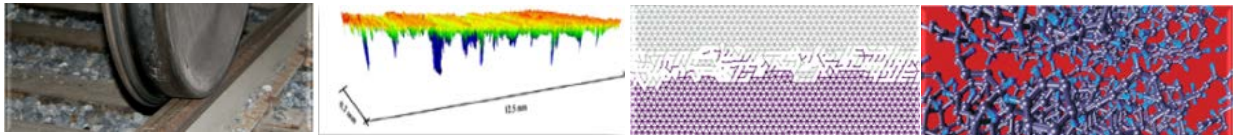




German-Russian Workshop  
**Friction: From elementary mechanisms  
to macroscopic behavior**

Berlin University of Technology

October 16-17, 2012



**“Now that Higgs’ boson has been discovered, that leaves friction as the last great mystery...”** (from personal correspondence)

**Organizers**

Prof. Dr. Valentin L. Popov and Prof. Dr. Sergey Psakhie

**Location**

The Workshop will take place at the TU Berlin

**Building M, room M 123**

Str. des 17. Juni 135  
D-10587 Berlin

(see attached campus plan of the Berlin Technical University).

**Contact**

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## Final Program

### October 16

8:20 – 8:50	Registration
8:50 – 9:00	Opening: <i>Popov V.L.</i>
	<i>Chair: Dienwiebel M.</i> <i>Atomic friction and wear</i>
9:00 – 9:35	Moseler M. <b>Atomic scale aspects in friction and wear of carbon tribofilms</b> <i>University of Freiburg, Germany</i>
9:35 - 10:10	Bennewitz R. <b>Atomic-scale wear studied by force microscopy</b> <i>INM – Leibniz-Institute for New Materials, Saarbrücken</i>
10:10 - 10:45	Meyer E. <b>Dissipation mechanisms on the nanometer scale</b> <i>University of Basel, Switzerland</i>
10:45 - 11:05	<i>coffee break</i>
	<i>Chair: Bennewitz R.</i> <i>Multiscale measuring and modeling</i>
11:05 - 11:50	Dienwiebel M. <b>In-situ multiscale observation of topography and wear of metallic tribosystems</b> <i>KIT-FhG Microtribology Centre <math>\mu</math>TC, Karlsruhe</i>
11:50 - 12:25	Müser M. <b>Simulation of elastic contacts between self-affine rough surfaces: Contact area, mean gap, and leakage conductivity</b> <i>University of Saarland, Germany</i>
12:25 – 13:00	Sivebaek I. <b>The effective viscosity of confined hydrocarbons</b> <i>Technical University of Denmark</i>
13:00 – 13:10	<b>Photo in front of the institute of mechanics</b>
13:10 – 14:20	<i>lunch</i>
	<i>Chair: Müser M.</i> <i>Method of reduction of dimensionality - foundations and validation</i>
14:20 -14:55	Popov V. <b>Method of reduction of dimensionality in contact mechanics and the physics of friction</b> <i>Berlin University of Technology, Germany</i>
14:55 – 15:30	<u>Pohrt R.</u> , Popov V.L. <b>Multiscale fractal roughness: Analytical scaling relations for the contact stiffness confirm recent numerical results</b> <i>Berlin University of Technology, Germany</i>
15:30 – 16:05	<u>Kürschner S.</u> , Popov V.L., Filippov A.E <b>Application of the method of reduction of dimensionality to viscous media</b> <i>Berlin University of Technology, Germany</i>
16:05 – 16:25	<i>coffee break</i>
	<i>Chair: Ostermeyer G.-P.</i> <i>Dynamic contacts</i>
16:25 – 17:00	<u>Teidelt E.</u> , Nguyen H.X, Willert E., Filippov A.E., Fatikow S., Popov V.L. <b>Modeling of piezo-actuated stick-slip micro-drives using the method of reduction of dimensionality</b> <i>Berlin University of Technology, Germany</i>

17.00 – 17.35	<i>Stingl B., Ciavarella M., Barber J.R., Hoffmann N.</i> <b>Oscillating frictional normal loading in Hertzian contact</b> <i>TUHH University, Hamburg. Germany</i> <i>Politecnico di BARI, Italy</i> <i>University of Michigan, USA</i>
17:35 – 18:10	<i>Dimaki A., Popov V.L.</i> <b>Simulation of friction of elastomers with method of reduction of dimensionality</b> <i>Institute of Strength Physics and Material Science, Russian Academy of Sciences Tomsk, Russia</i>

## October 17

	<i>Chair: Moseler M.</i> <i>Friction and dynamics</i>
9:00 - 9:35	<i>Ostermeyer G.-P.</i> <b>Interface Vibrations in Brake pads</b> <i>Institute of Dynamics and Vibration</i> <i>Technical University Braunschweig</i>
9:35 – 10:10	<i>Volokitin A.</i> <b>Quantum friction and graphene</b> <i>Samara State Technical University</i>
10:10 -10:45	<i>Wetter R., Popov V.L.</i> <b>The influence of system dynamics on the coefficient of friction: a discrete model</b> <i>Berlin University of Technology, Germany</i>
10:45 – 11:05	<i>coffee break</i>
	<i>Chair: Meyer E.</i> <i>Adhesion and Friction</i>
11:05 – 11:40	<i>Persson B.N.J.</i> <b>Adhesion of cellulose fibers in paper</b> <i>Research Center Juelich</i>
11:40 – 12:15	<i>Urbakh M.</i> <b>Formation and rupture of capillary bridges in atomic scale friction</b> <i>School of Chemistry, Tel Aviv University, Israel</i>
12:15 – 12:50	<i>Filippov A., Popov V.L., Gorb S.</i> <b>Numerical simulation of biological systems involving friction and adhesion: From elementary mechanisms to macroscopic adaptation, behavior and survival advantages</b> <i>Academy of Sciences of Ukraine</i>
12:50 – 14:00	<i>lunch</i>
	<i>Chair: Filippov A.</i> <i>Plastic deformation and wear: simulation and measurement</i>
14:00 -14:35	<i>Psakhie S., Kryzhevich D., Zolnikov R.</i> <b>Atomistic simulation of incipient stages of plasticity in a crystal during contact</b> <i>Institute of Strength Physics and Material Science, Russian Academy of Sciences Tomsk, Russia</i>
14:35- 15:10	<i>Panin S.</i> <b>Regularities of wear of structurally modified ultrahigh molecular weight polyethylene-based composites</b> <i>Institute of Strength Physics and Material Science, Russian Academy of Sciences Tomsk, Russia</i>
15.10 15.45	<i>Dmitriev A.</i> <b>Estimation of the effective diffusion coefficient for random fluctuation of friction layer position by MCA and molecular dynamics</b> <i>Institute of Strength Physics and Material Science, Russian Academy of Sciences Tomsk, Russia</i>

15:45 – 16:05 *coffee break*

*Chair: Popov  
Applications*

16:05 – 16:25 Popov. M., Benad J.  
**Simulation of rolling noise**  
*Berlin University of Technology, Germany*

16:25 – 16:45 Ekwiński G., Ekwińska M., Rymuza Z.  
**Simple Method of Simulation of Elastic and Plastic Deformations  
Applied in Statically Loaded Nanotribological Contacts**  
*Warsaw University of Technology*

16:45 – 17:05 Nolbert D., Rymuza Z.  
**Frictional and adhesive interactions at the interface mold-resist in nanoimprint  
lithography process**  
*Warsaw University of Technology*

17:05 – 17:25 Li Qiang  
**Electrical resistance in a lubricated rolling contact with a boundary layer**  
*Berlin University of Technology, Germany*

17:25 – 17:35 *closing: Popov V.L.*



### By Air

- International Airport Berlin-Tegel
  - By taxi (approx. 15 min.);
  - By Airport-Express-Bus Transfer-Line X9 (approx. 25 min.) or by City-bus Line 109 (approx. 45 min.) to the stop "Zoologischer Garten" and then as described from train station "Berlin-Zoo" to the IfM.
- International Airport Berlin-Schönefeld
  - By taxi (approx. 45 min.);
  - By AirportExpress-Train (approx. 35 min.) or RegionalExpress-Train (approx. 40 min.) to the stop "Zoologischer Garten" and then as described from train station "Berlin-Zoo" to the IfM.
  - By S-Bahn Line S9 (approx. 60 min.) to the stop "Zoologischer Garten" and then as described from train station "Berlin-Zoo" to the IfM.
- International Airport Berlin-Tempelhof
  - By taxi (approx. 30 min.);
  - By Underground Line U6 and Line U2 (approx. 45 min.) to the stop "Zoologischer Garten" and then as described from train station "Berlin-Zoo" to the IfM.



### By Train

- Train Station "Berlin-Zoo"
  - By taxi (approx. 10 min.);
  - On foot (approx. 10 min.) via Jebensstraße, Hertzallee, crossing the Fasanenstrasse and entering the campus, then turn right to the building "Gebäude M").



### By Car

- From the direction of Hannover, Leipzig, Nürnberg:
  - take the motorway A115 (Avus) to Charlottenburg A100, exit "Spandauer Damm", turn right into and follow "Otto-Suhr-Allee" until you reach the circle "Ernst-Reuther Platz", take the third exit "Straße des 17. Juni", keep straight right to enter the campus.
- From Northern Europe, direction Hamburg, Rostock:
  - take the motorway A111 to Charlottenburg A100, exit "Spandauer Damm", turn left into and follow "Otto-Suhr-Allee" until you reach the circle "Ernst-Reuther Platz", take the third exit "Straße des 17. Juni", keep straight right to enter the campus.

