THE MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION

NATIONAL RESEARCH TOMSK STATE UNIVERSITY

The Faculty of Physics

**Conference Programme**

**1st Conference of TSU Physics Students**

16 May 2016



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|  | **Welcome****to the 1-st Conference****of TSU Physics Students** |

*Dear Friends and Colleagues,*

*It is our great pleasure to invite you to attend the 1stConference of TSU Physics Students. You will have an opportunity to share your research results and experiences in studying physics, receive feedback from a scientific committee, test your communication skills and meet people who share the same passion for physics.*

*Our life and work are getting more and more dependent on physics and its discoveries. Let us appreciate this blissful moment when we can come together, talk, discuss, share, doubt, believe and find out more about physics from each other.*

*The conference is structured into 2 main sections: Plenary and Poster, each of these sections involving 1st year and senior students. The participants can present their work in form of posters or as oral presentations.*

*The programme of the event promises to blend academic, social and cultural experiences and offers the participants a great experience. The scientific committee from the Faculty of Physics and the Faculty of Foreign Languages are going to evaluate the participants’ presentations by taking into consideration their scientific relevance, originality and knowledge level of the subject matter of the participants. Awards for the best plenary papers will be given. All participants will be awarded certificates.*

*Welcome to our first Student Conference held at the Faculty of Physics!*

*On behalf of the organising committee*

Dean of the Faculty of Physics

Professor Olga N. Chaikovskaya .

Deputy Dean for Research at the Faculty of Foreign Languages,

Associate Professor Olga A. Obdalova

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| 15:30-16:00 | Conference Registration |
| 16:00-16:15 | Opening Ceremony |
| 16:15-17.15 | **Oral Session** |
| 17.15-17:45 | Poster Session |
| 17:45-18:00 | Closing Ceremony |

Venue:

***Research Library***

Tomsk State University

34 Lenin ave.

Tomsk

**Organising Committee**

*Olga Chaikovskaya*, Dean of the Faculty of Physics, Doctor of Physics and Mathematics, Professor

*Olga Obdalova,* Associate Professor,Deputy Dean for Research at the Faculty of Foreign Languages,

*Irina Savitskaya*, Project Manager, Senior Lecturer

*Elena Gulbinskaya*, Senior Lecturer, the Faculty of Foreign Languages

*Olga Nagel*, Associate Professor, the Faculty of Foreign Languages

*Aleksandra Nabiullina*, Lecturer, the Faculty of Foreign Languages

*Olga Zubkova*, Lecturer, the Faculty of Foreign Languages

*Yan Chemezov*, Lecturer, the Faculty of Foreign Languages

**Student Organising Committee**

**Chairman**: DmitriyEzhov, group 523

Irina Gritsenko, 554-1

Yuliia Isachenko, group 552-1

Anastasiia Koniushenko, group 552-1

Anastasiia Kravchenko, group 552-1

Irina Krylova, group 552-1

AlekseyTuchak, 552-1

Polina Shnaider, group 552-1

Anastasiia Shubina, group 552-1

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| **15:30-16:00** | **Opening Ceremony** |

Key-note Speakers

Strong electromagnetic fields in modern physics

**Dr. Tiago Carlos Adorno de Freitas**, Post Doc in Theoretical Physics (TSU)

Educational system in India

**Murali Balasubramoniam Krishna,** Post Doc in Theoretical Physics (TSU)

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| **16:15-17:15** | **Oral Session**  |
| **Ivan Bagrintsev** Quantum computing: to be or not to be**Anastasiia Belova** “Expanded local mode” approach applied to ethylene molecule*Elena Bekhtereva, Doctor of Physics and Mathematics, Professor* |
| **Ezher Biteshev** Augmental reality: the fascinating world |
| **Ekaterina Belozyorova, Rustam Peerov** The standard model in elementary particles physics |
| **Evgeniy Goncharov** The Fusion Energy |
| **Maria Goroshko** Shape memory Alloys |
| **Dmitriy Ezhov**Non-linear absorption in CaSexSx-1 crystals under high power laser excitation*Valeriy Svetlichnyi, Candidate in Physics and Mathematics, Associate Professor* |
| **Natalia Zhludko**Linear dynamic systems with higher derivativesSemen Lyakhovich, *Doctor of Physics and Mathematics, Professor, Aleksei Sharapov, Doctor of Physics and Mathematics, Professor* |
| **Igor Kamyshev, Artyom Fuchs**Medical Optics |
| **Oleg Kolesnikov** Relation between generating function and generator of canonical (anticanonical) transformation*Peter Lavrov, Doctor of Physics and Mathematics, Professor* **Tatyana Nevzorova** Review of the article: “Total volcanic stratospheric aerosol optical depthsand implications for global climate change” |
| **Marina Panchenko**THERMOELASTIC γ-α' MARTENSITIC TRANSFORMATION WITH SHAPE MEMORY EFFECT AND SUPERELASTICITY IN SINGLE CRYSTALS OF ALLOYS FeNiCoAlNb *Irina Kireeva, Doctor of Physics and Mathematics, Professor, Yuriy Chumlaykov, Doctor of Physics and Mathematics* |
| **Sergey Filukov**[Rici-flat](https://www.researchgate.net/publication/275055061_Self-dual_metrics_with_maximally_superintegrable_geodesic_flows) spacetimes and superintegrable models*Anton Galajinski, Doctor of Physics and Mathematics, Professor* |
| **Alexandr Khoroshikh** Interstellar Engines |
| **Yana Chizhmakova**Vibrational kinetic energy operator for the AB4-type molecules*Andrey Nikitin, Doctor of Physics and Mathematics, Professor* |
| **Ekaterina Shmidt**STRUCTURE OF TANTALUM-IMPLANTED TITANUM NICKELIDE SURFACE LAYERS *Tamara Poletika, Doctor of Physics and Mathematics, Professor, Ludmila Meisner,* *Doctor of Physics and Mathematics, Professor* |
| **Igor Shvets** Formation of the bismuth-bilayer film at BiTeCl surface by atomic hydrogen deposition*Vladimir Kuznetsov, Candidate in Physics and Mathematics, Associate Professor* |

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| **17:15-17:45** | **Poster Session** |
| **Irina Bessonova, Anna Menchikova, Stanislav Minaev** Diffusion |
| **Anastasiya Evdokimova, Miroslava Cherepanova, Oleg Emelyanov, Nikita Polomarchuk** Newtonian Fluid |
| **Andrew Zhdanov, Ilmurat Oshurov, Michael Krekov** Physics in medicine: perspectives and opportunities |
| **Seyavush** **Ismatulaev** Exoplanets |
| **Katerina Kareva, Anastasiya Saraeva, Olga Shevtsova** Carbyne – a new super strong material |
| **Alyona Klimova** The Doppler Effect |
| **Alexander Kuzmin, Anastasiya Bortnik** Paradoxes of elementary particles physics**Dmitry Lataev** Ball Lightning: the first evidence on video |
| **Mikhail Lezhnin, Aleksey Tuchak** Light-field camera: technology and perspectives |
| **Ekaterina Mordasova, Irina Gritsenko, Tatyana Silantyeva, Yaroslava Panteleeva** Ferrofluid |
| **Regina Mukhamedova, Michael Kukanov** Exoplanets: potential habitability |
| **Ivan Retuntsev, Pavel Fokin, Denis Gomboev, Konstantin Turov, Nikita Sorokin** Space Elevator |
| **Dariya Rzheutskaya, Ekaterina Zhavoronkova, Ekaterina Shmidt** The Nobel Prize winners in physics: latest discoveries |
| **Vera Vilisova** Heleoshere**Matvey Vishnevski, Mark Kruglyakov**GELS AND NANOWIRES  |
| **Eleonora Yanushonite, Diana Barashkova** Black hole: danger or salvation |
| **Igor Yakovlev, Eleonora Okoneshnikova** Magnetic Liquid |

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| **17:45-18:00** | **Closing Ceremony** |