

TERA 2018

3rd International Conference

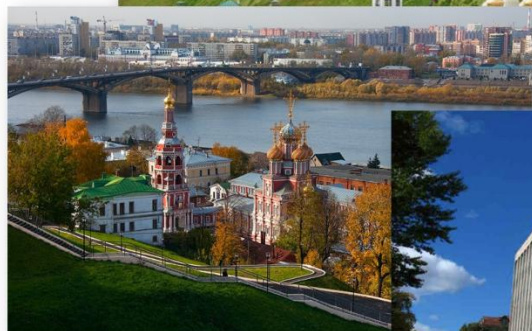
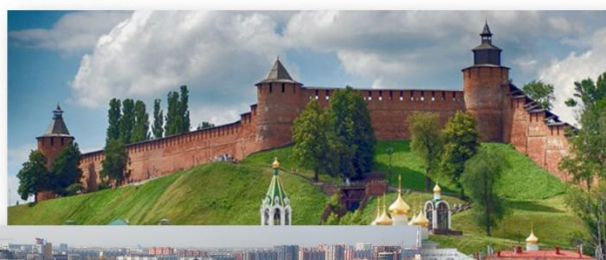
Terahertz and Microwave Radiation: Generation, Detection and Applications

<http://tera2018.ipfran.ru>

October 22 – 25, 2018

**Institute of Applied Physics of the Russian Academy of Sciences
46 Ulyanov Street · 603950 · Nizhny Novgorod · Russia**

tera2018@ipfran.ru



Conference Chairman

Dr. Mikhail Glyavin

Institute of Applied Physics RAS

Co-Chairs

Prof. Boris Knyazev

Budker Institute of Nuclear Physics RAS
Novosibirsk State University

Prof. Alexander Shkurinov

Lomonosov Moscow State University

Scientific Secretary

Dr. Alexander Silaev

Institute of Applied Physics RAS

Organizing Committee

Dr. Anton Sedov

Institute of Applied Physics RAS

Second Announcement

The International Scientific Committee and the Local Organizing Committee are pleased to invite you to participate in the 3-rd International Conference “Terahertz and Microwave radiation: Generation, Detection and Applications” (TERA-2018). The conference will be devoted to the wide range of fundamental and applied related to the generation and detection of terahertz and microwave radiation as well as its interaction with matter. The Conference will be held at the Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, in the form of plenary, keynote, invited, oral talks as well as poster session.



Institute of Applied Physics RAS



M.V. Lomonosov Moscow State University



Budker Institute of Nuclear Physics SB RAS

Scientific Production Enterprise "GYCOM"

Conference Topics

- S1. Electronic sources of THz & MW radiation, synchrotron radiation, free-electron lasers.
- S2. Optoelectronic & solid-state sources of THz radiation.
- S3. Generation of THz radiation by intense laser pulses
- S4. Quantum cascade lasers.
- S5. Detection of THz & MW radiation. Metrology in THz frequency range.
- S6. Study of materials (including nano- and metamaterials) with the help of THz & MW radiation. Time-domain and CW spectroscopy.
- S7. Interaction of high-power THz and MW radiation with matter. Application of THz radiation for the research and control of ultrafast process in physics, chemistry and biology.
- S8. Terahertz & microwave imaging: tomography, holography and near-field microscopy.
- S9. Systems of security and non-destructive control using THz and MW radiation. Remote sensing with THz radiation. Communication in THz frequency range.
- S10. Medical and biological applications of THz radiation.






Special Events

- E1. Symposium
FIR-LAB - INTERNATIONAL RESEARCH NETWORK "Bright Far-Infrared Optoelectronic Sources for Field-Matter Interaction Studies, Life Sciences and Environmental Monitoring".
- E2. International Associated Laboratory
"Laboratory of Terahertz and Mid-Infrared Collective Phenomena in Semiconductor Nanostructures".
- E3. Special Section
"Status of the User Facilities Centers"

PRELIMINARY LIST OF PLENARY, KEYNOTE AND INVITED TALKS

The up-to-date list is available at the Conference website <http://tera2018.ipfran.ru/>

Plenary lectures

-  **Nikolay A. Vinokurov** · Budker Institute of Nuclear Physics RAS, Novosibirsk, Russia
Generation of High-Power Terahertz and Far Infrared Electromagnetic Radiation with Relativistic Electrons
-  **Alessandro Tredicucci** · Università di Pisa, Pisa, Italy
Title to be announced
-  **Gun-Sik Park** · Seoul National University, South Korea
Investigations of hydration dynamics in biomedical systems using terahertz waves
-  **Andrew K. Martusevich** · Research Medical University of Volga region, Nizhny Novgorod, Russia
Alexander V. Kostrov · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
Biomedical applications of microwave radiation: innovative approaches
-  **Stelios Tzortzakos** · Institute of Electronic Structure and Laser, Heraklion, Greece
Extreme THz fields from near and mid-infrared laser filaments

Invited and Keynote Talks

S1. Electronic sources of THz & MW radiation, synchrotron radiation, free-electron lasers.

Co-chairs: **Vladimir Zapevalov** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
Manfred Thumm · Karlsruhe Institute of Technology, Karlsruhe, Germany

- > **Yoshinori Tatematsu** · University of Fukui, Japan
Recent progress in development and application of sub-THz gyrotrons in University of Fukui (invited talk)
- > **Pascale Roy** · Synchrotron SOLEIL, France
Title to be announced (invited talk)
- > **Andrea Doria, Gian Piero Gallerano** · ENEA, Frascati, Italy
Novel schemes for compact FELs in the THz region: ENEA experience and perspectives (invited talk)
- > **Gun-Sik Park** · Seoul National University, South Korea
THz generation from high-Q Fano metallic metamaterial (invited talk)

S2. Optoelectronic & solid-state sources of THz radiation.

Chairman: **Viktor Ustinov** · Ioffe Physical-Technical Institute RAS, St Petersburg, Russia
Rinat A. Akhmedzhanov · Institute of Applied Physics RAS, Nizhny Novgorod, Russia

- > **Viktor Ustinov** · Ioffe Physical-Technical Institute RAS, St Petersburg, Russia
Molecular beam epitaxial growth of semiconductor heterostructures for THz electronics (keynote talk)
- > **Vladimir Gavrilenko** · Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
THz stimulated emission at interband transitions in HgTe/CdHgTe quantum wells (invited talk)
- > **Valery Shastin** · Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
Terahertz lasers based on donor intracenter transitions in silicon (invited talk)

S3. Generation of THz radiation by intense laser pulses.

Co-chairs: **Olga Kosareva** · Lomonosov Moscow State University, Moscow, Russia
Kodo Kawase · Nagoya University, Nagoya, Japan
Michael Bakunov · Lobachevsky State University of Nizhny Novgorod, Russia
Andrey Ionin · Lebedev Physical Institute, Moscow, Russia

- **Tsuneyuki Ozaki** · Institut national de la recherche scientifique, Quebec, Canada
THz nonlinear optics in the sub-cycle regime (keynote talk)
- **Kosuke Murate, Kodo Kawase** · Nagoya University, Japan
Multi wavelength injection-seeded THz parametric system (invited talk)
- **Dongwen Zhang** · National University of Defense Technology, Changsha, China
Coherent multichannel dynamics of aligned molecules resolved by two dimensional high-harmonic and terahertz spectroscopy (invited talk)
- **Alexander Popov** · Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russia
New Approach to Generation and Amplification of the THz Radiation in Plasma Created by Intense Two-Color Laser Fields (invited talk)
- **Stefan Skupin** · Institut Lumière Matière, Université Lyon, France
Resonant Effects in Terahertz Generation with Laser-Induced Gas Plasmas (invited talk)
- **Stelios Tzortzakis** · Foundation for Research and Technology— Hellas, Heraklion, Greece
Title to be announced (invited talk)
- **Fabian Rotermund** · Korea Advanced Institute of Science & Technology, KAIST
THz nonlinear photonics: generation and applications (invited talk)
- **Matteo Clerici** · University of Glasgow, UK
Broadband THz generation and detection (invited talk)

S4. Quantum cascade lasers

Co-chairs: **Alexei Baranov** · University of Montpellier, France
Rustam Khabibullin · IUHFSE RAS, Russia

- **Alexei Baranov** · University of Montpellier, France
Long wavelength InAs-based quantum cascade lasers (keynote talk)
- **Rustam Khabibullin** · V.G. Mokerov Institute of Ultra High Frequency Semiconductor Electronics of RAS, Moscow, Russia
Terahertz quantum cascade laser with silver- and gold-based waveguide (invited talk)
- **Rostislav Arkhipov** · ITMO University, Saint Petersburg, Russia
Generation of ultra-short pulses via self-induced transparency mode-locking regime in lasers (invited talk)
- **Maxim Nazarov** · National Research Center "Kurchatov Institute", Moscow, Russia
Polymer waveguides for THz QCL radiation delivery and filtering (invited talk)
- **Andrey Khudchenko** · University of Groningen / NOVA, Netherlands
Phase-locking Techniques for THz Quantum Cascade Lasers (invited talk)
- **Andrey Babichev** · Connector Optics LLC, Saint Petersburg, Russia
Quantum-cascade lasers of mid-IR spectral range: epitaxy, diagnostics and device characteristics (invited talk)

S5. Detection of THz & MW radiation. Metrology in THz frequency range.

Co-chairs: **Gregory Goltsman** · Moscow State University of Education, Moscow, Russia
Vyacheslav Vdovin · Institute of Applied Physics RAS, Nizhny Novgorod, Russia

- **Galiya Kitaeva** · Lomonosov Moscow State University, Moscow, Russia
Optical – terahertz biphotons (invited talk)

S6. Study of materials (including nano- and metamaterials) with the help of THz & MW radiation. Time-domain and CW spectroscopy.

Co-chairs: **Boris Gorshunov** · Moscow Institute of Physics and Technology, Dolgoprudny, Russia
 Mikhail Yu. Tretyakov · Institute of Applied Physics RAS, Nizhny Novgorod, Russia

- **Robin Bocquet** · University of the Littoral Opal Coast, Dunkerque, France
Developments on a 200 GHz chirped pulse experiment at Dunkerque (invited talk)
- **Alexander Boris** · Max Planck Institute for Solid State Research, Stuttgart, Germany
Exploring in-gap excitations in high-T_c superconducting films by THz and infrared spectroscopy (invited talk)
- **Konstantin Motovilov** · Moscow Institute of Physics and Technology, Dolgoprudny, Russia
Water and conductivity in bioorganic materials: complicated interplay (invited talk)
- **Leonid Surin** · Institute for Spectroscopy RAS, Troitsk, Moscow
Millimeter-wave spectroscopy of weakly bound molecular complexes and small clusters (invited talk)
- **Oleg Potaturkin** · Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia
Oxide nonlinear crystals: optical properties and phase-matching for terahertz wave generation (invited talk)
- **Elena Zhukova** · Moscow Institute of Physics and Technology, Russia
H₂O molecules hosted by a crystalline matrix – new state of water (invited talk)
- **Alexey Nikitin** · Scientific and Technological Center of Unique Instrumentation RAS, Moscow, Russia
Terahertz plasmonics: achievements and prospects (invited talk)
- **Evgeniy Chesnokov** · Budker Institute of Nuclear Physics RAS, Novosibirsk, Russia
The first observation of the free radical in time domain. Time-dependent Faraday rotation of the free induction signals in terahertz (invited talk)

S7. Interaction of high-power THz and MW radiation with matter. Application of THz radiation for the research and control of ultrafast process in physics, chemistry and biology.

Chairman: **Andrey Stepanov** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia

- **Vladimir Pavelyev** · Samara National Research University, Russia
Terahertz optical elements for control of high-power laser irradiation (keynote talk)
- **Vitaly Kubarev** · Budker Institute of Nuclear Physics RAS, Novosibirsk, Russia
Experiments using extreme parameters of NovoFEL radiation (invited talk)
- **Andrey Savel'ev** · Lomonosov Moscow State University, Russia
Nonlinear Transfer of Intense Few Cycle Terahertz Pulse Through Opaque semiconductors (invited talk)
- **Sergei Kozlov** · ITMO University, Saint Petersburg, Russia
Disappearance of Self-Focusing for Few-Cycle THz Pulses (invited talk)

S8. Terahertz & microwave imaging: tomography, holography and near-field microscopy.

Co-chairs: **Vladimir Cherepenin** · Kotelnikov Institute of Radio Engineering and Electronics RAS, Moscow, Russia
 Alexander Kostrov · Institute of Applied Physics RAS, Nizhny Novgorod, Russia

S9. Systems of security and non-destructive control using THz and MW radiation. Remote sensing with THz radiation. Communication in THz frequency range.

Chairman: **Leonid Skvortsov** · POLYUS Research Institute of M.F. Stelmakh, Moscow, Russia

- **Vyacheslav Trofimov** · South China University of Technology, Guangzhou, China;
Lomonosov Moscow State University, Russia

Detection and identification of a substance with an inhomogeneous surface using the effective time-dependent THz spectroscopy method and emission frequency up-conversion (invited talk)

S10. Medical and biological applications of THz radiation.

Co-chairs: **Gian Piero Gallerano** · ENERA, Italy

Gun-Sik Park · Seoul National University, Seoul, South Korea

Valery Tuchin · Saratov State University, Saratov, Russia

Vladimir Vaks · Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia

- **Yury Kistenev** · Tomsk State University, Tomsk, Russia
Applications of THz laser spectroscopy and machine learning for medical diagnostics (invited talk)
- **Ilya Ozheredov** · Lomonosov Moscow State University, Moscow, Russia
Application of THz radiation for in situ control of eye cornea hydration level (invited talk)
- **Kirill Zaytsev** · Prokhorov General Physics Institute of RAS
Intraoperative diagnosis of malignant brain gliomas using terahertz pulsed spectroscopy and optical coherence tomography (invited talk)
- **Olga Cherkasova** · Institute of Laser Physics SB RAS, Novosibirsk, Russia
Study of blood and its components by terahertz pulsed spectroscopy (invited talk)
- **Olga Smolyanskaya** · ITMO University, Saint Petersburg, Russia
Complex study of interaction of terahertz radiation with bio-like objects: theoretical and numerical modeling, real objects and phantom experiments (invited talk)
- **Vladimir Vaks** · Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
High resolution terahertz spectroscopy for medical, biological and agricultural applications (invited talk)

Special Events

E3. Special Section "Status of the User Facilities Centers"

Co-chairs: **Boris Knyazev** · Budker Institute of Nuclear Physics, Novosibirsk State University, Novosibirsk, Russia

Young Uk Jeong · Korea Atomic Energy Research Institute, Daejeon, South Korea

- **Young Uk Jeong** (Korea Atomic Energy Research Institute)
Ultrafast THz-pump & Electron-probe Facility at KAERI (keynote talk)
- **Oleg. A. Shevchenko** (Budker Institute of Nuclear Physics RAS, Novosibirsk, Russia)
Novosibirsk free electron laser facility (keynote talk)
- **Mikhail Yu. Glyavin** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
Application of High Power Terahertz Gyrotrons in the Breakthrough Studies (keynote talk)
- **Boris A. Knyazev** · Budker Institute of Nuclear Physics RAS, Novosibirsk State University, Novosibirsk, Russia
Recent experiments at NovoFEL user stations (keynote talk)
- **Harald Schneider** · Institute of Ion-Beam Physics and Materials Research, Dresden, Germany
THz science at FELBE (keynote talk)
- **Britta Redlich** · FELIX Laboratory, Radboud University, The Netherlands
Title to be announced (keynote talk)

Organizing and Advisory Committees

International Scientific Committee

- **S. Alberti** · Ecole Polytechnique Fédérale de Lausanne, Switzerland
- **J.-L. Coutaz** · University of Savoie, France
- **G.G. Denisov** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- **G.P. Gallerano** · ENERA, Italy
- **T. Idehara** · University of Fukui, Japan
- **Young Uk Jeong** · Korea Atomic Energy Research Institute, Daejeon, South Korea
- **K. Kawase** · Nagoya University, Japan
- **R.A. Khabibullin** · IUHFSE RAS, Moscow, Russia
- **D.R. Khokhlov** · Lomonosov Moscow State University, Moscow, Russia
- **S.A. Kozlov** · ITMO University, Saint-Petersburg, Russia
- **G.N. Kulipanov** · Budker Institute of Nuclear Physics, Novosibirsk, Russia
- **Jean Leotin** · High Magnetic Field National Laboratory of Toulouse, France
- **A.G. Litvak** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- **Paolo De Natale** · Istituto Nazionale di Ottica, Italy
- **Hiroyuki Nojiri** · Institute for Materials Research, Tohoku University, Japan
- **Gun-Sik Park** · Seoul National University, Seoul, South Korea
- **N.A. Vinokurov** · Budker Institute of Nuclear Physics, Novosibirsk, Russia
- **V.L. Vaks** · Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
- **H. Schneider** · Helmholtz Zentrum Dresden-Rossendorf, Dresden, Germany
- **M.Yu. Tretyakov** · Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- **Zengxiu Zhao** · National University of Defense Technology, Changsha, China
- **X.-C. Zhang** · Institute of Optics, University of Rochester, USA
- **Michael I. Bakunov** · Lobachevsky State University of Nizhny Novgorod, Russia

Local Organizing Committee · Institute of Applied Physics RAS

- Anton Sedov (Head), anton-sedov@mail.ru
- Tatyana Krapivnitskaya
- Olga Mocheneva
- Andrey Fokin
- Mikhail Proyavin
- Irina Morozova
- Alexander Tsvetkov

IMPORTANT INFORMATION

Key Dates

- Registration opens: **April 12, 2018**
- **Short abstract submission deadline (extended):** **June 21, 2018**
- Author acceptance notification: **July 01, 2018**
- Early registration payment deadline: **September 10, 2018**
- Two-page paper submission deadline: **September 10, 2018**
- Conference opening: **Monday, October 22, 2018**

Registration Fees

Registration Type	Early (through September 10)	Late (after September 10)
Regular	200 USD or 170 EUR	250 USD or 210 EUR
Student	100 USD or 85 EUR	150 USD or 125 EUR
Sponsor & Exhibitor	Please contact organizing committee: tera2018@ipfran.ru	
Additional Banquet Ticket	30 USD or 25 EUR	

Registration fee includes conference materials, lunches, coffee breaks, excursion, and banquet ticket for one person. It does not include any other meals or lodging costs.

All presenting authors must pay registration fee and are limited to present no more than two papers in oral and/or poster sessions. It is planned to publish the synopses of the Conference in the [EPJ Web of Conferences](#), which is an open-access journal for conference proceedings publishing indexed in major scientific databases. For more information on the journal, please visit <http://www.epj-conferences.org/>.

Short Abstract Submission

Authors of all contributed papers should submit short abstracts before June 15, 2018. Please fill out the online-form at www.tera2018.ipfran.ru. The short abstracts will be used for evaluation and acceptance of papers. The acceptance decision will be sent to all authors of contributed papers before July 01, 2018. The authors of invited papers do not need to submit short abstracts.

Venue & Visa Information



Please send the copy of the first page of your passport to tera2018@ipfran.ru **no later than September 10** in order to issue a pass to IAP RAS. It will be impossible just before or during the conference!

If you are going to apply for a Russian visa, please send us the filled questionnaire. See "Appendix A" below or download: http://tera2018.ipfran.ru/data/questionnaire_visa.docx

If you are interested in receiving further information about the Conference, please pre-register online at www.tera2018.ipfran.ru. Alternatively, a registration form (see "Appendix B" below) may be sent by e-mail to the Organizing Committee (tera2018@ipfran.ru).

Contacts

Please address all correspondence to the Scientific Secretary of the Conference:

Dr. Alexander Silaev
TERA-2018 Scientific Secretary
Institute of Applied Physics RAS
46 Ulyanov Street, 603950 Nizhny Novgorod, Russia
Tel: +7(831)4321446, Fax: +7 (831)4160616
E-mail: tera2018@ipfran.ru
Web: www.tera2018.ipfran.ru

RUSSIAN VISA QUESTIONNAIRE

Full name (as per passport)	
Other names (If you ever used other names: your maiden name, or any other name by which you are or have been known)	
Citizenship	
Country of residence	
Region in the country of residence	
Date of birth	
Place of birth (city, country)	
Passport number	
Passport date of issue	
Passport expiry date (please, note that the date has to be at least six months later than the date of planning end of the visit)	
Place of employment (full name, address)	
Position	
Dates of stay in Russia (arrival/departure)	
Place of getting visa (city, where the Russian Consulate is situated)	
Copy of passport	
Mailing address (please specify also a valid telephone number corresponding to this address)	

REGISTRATION FORM

Family Name	
First Name(s)	
Second Name (if available)	
Position	
Affiliation	
Mailing Address	
Tel	
Fax	
E-mail	
Title of the talk	
Authors	
Section / Event	