Program
of 9th International Workshop on Fiber Lasers
"Russian Fiber Lasers 2020" (*in virtual format*)

September 20, 2020 *Novosibirsk time (GMT+7)*

14^{00} Official opening of the workshop

Special session on nanophotonics

Chair: S.A. Babin

14^{15} A. I. Maimistov[1], E .I. Lyashko[1], N. V. Bykov[2] ([1]*National Research Nuclear University «MIFI», [2] N.E. Bauman Moscow State Technical University, Moscow*)

Transverse angular momentum of nonlinear wave at the interface between topological insulator and metamaterial

14^{35} A. K. Sarychev[1], A. V. Ivanov[2] ([1]*Institute of Theoretical and Applied Electrodynamics, RAS, Moscow*)

Generation of Electromagnetic modes in ultra-narrow nano-gap between silver surfaces

14^{55} L.L. Frumin, D.A. Shapiro (*Institute of Automation and Electrometry, SB RAS, Novosibirsk*)

Sensitivity enhancement of plasmonic grating in near field

15^{15} A.A. Gelash[1], R.I. Mullyadzhanov[2,3], L.L. Frumin[1] ([1]*Institute of Automation and Electrometry, SB RAS, Institute of Thermophysics, SB RAS, [3]Novosibirsk State University)*

Direct and inverse scattering transform algorithm for complex wave fields

15^{35} A.S. Beryoza[1,2], D.A. Shapiro[1,2] ([1]*Institute of Automation and Electrometry, SB RAS, [2]Novosibirsk State University, Novosibirsk)*

Modified Born approximation for the scattering of electromagnetic waves by nanoparticles

15^{50} – 16^{00} break

Chair: D.A. Shapiro

16^{00} A. D. Pryamikov (*A. M. Prokhorov General Physics Institute, RAS, D.I.Mendeleyev RCTU, Moscow*)

Phase dislocations in hollow micro-structured fibers

16^{20} S.S. Fedotov[1], L.N. Butvina[2], A.G. Okhrimchuk[1,2] ([1]*D.I. Mendeleyev Russian Chemical-Technological University,[2] A. M. Prokhorov GPI, RAS, E.M. Dianov FORC, Moscow*)

Plastic deformation as a nature of direct femtosecond laser writing of waveguides in YAG chrystals

16^{40} G.K. Alagashev[1], V.P. Smayev[1], A.A. Gulin[2], A.G. Okhrimchuk[1,3] (*[1]D.I. Mendeleyev University of Chemical Technology of Russia, [2]N.N. Semyonov Federal Research Center for Chemical Physics, [3]A. M. Prokhorov GPI, RAS, E.M. Dianov FORC, Moscow)*

Role of ion diffusion in direct femtosecond laser writing in tellurite glass

17^{00} V.V. Shelkovnikov[1,2], E. V. Vasilyev[1], N. V. Vasilyeva[1], S.V. Korotayev[1], I.Yu. Kargapolova[1], N.A. Orlova[1] (*[1] Novosibirsk Institute of Organic Chemistry, SB RAS, [2]Novosibirsk State Technical University, Novosibirsk*)

Poling of chromophore-polymer films in the field of corona discharge at changing temperature for the creation of induced optical nonlinearity in chromophore

17^{20} E. F. Martynovich (*Irkutsk Branch of ILP, SB RAS, Irkutsk)*

Nonlinear trajectories of luminescence intensity of single quantum systems

17^{40} * A. A. Zyablovskiy[1], I. V. Doronin[1], E.A. Andrianov[1], Yu. E. Lozovik[1], A. A. Pukhov[1], A. P. Vinogradov[1], A. A. Lisyansky[2] (*[1]N.L.Dukhov VNIIA, Moscow, [2]Queens College of the City University of New York, New York, USA)*

Threshold formation of a laser mode in singular point in the laser with open cavity

17^{55} * V. Yu. Shishkov, E. S. Andrianov, **A. A. Pukhov, A. P. Vinogradov** (*N.L.Dukhov VNIIA, Moscow*)

Influence of the statistical properties of incident light on the quantum correlations between Stokes and anti-Stokes waves

18^{10} * V. Yu. Shishkov[1,2,3], E. S. Andrianov[1,3], A. A. Pukhov[1,2,3], A. P. Vinogradov[1,2,3], A. A. Lisyansky[4,5] (*[1]N.L.Dukhov VNIIA, Moscow, [2]Institute of Theoretical and Applied Electrodynamics, RAS, Moscow, [3]Moscow Physical-Technical Institute (State University); [4]Queens College of the City University of New York, [5]Educational Center of City University of New York, USA)*

Brillouin diffusion as a mechanism for background appearance in SERS experiments

September 21, 2020

Plenary Session

Chairs: S. A. Babin, M. P. Fedoruk

10[00] Pavel Sidorenko, Frank Wise (*Cornell University, USA*)
Ultrafast fiber amplifiers beyond the gain narrowing limit **(invited)**

11[00] Pu Zhou, Wenchang Lai, Wei Liu, Can Li, Rongtao Su, Hu Xiao, Jinyong Leng, Pengfei Ma (*NUDT, Changsha, China*)
High Power Narrow-Linewidth Fiber Lasers **(invited)**

Section 1. New gain media, schemes and generation regimes of fiber lasers

12[00] Chengbo Mou (*Shanghai university, China*)
Fiber Brewster Gratings and their applications in ultrafast fiber lasers **(invited)**

12[30] Lei Gao (*Chongqing University, China*)
Real-time detections of multi-parameters of ultrafast lasers **(invited)**

13[00] - 14[00] break

Chair: I. A. Lobach

14[00] P. Peterka[1], P. Koška[1], A. A. Jasim[1], M. Grábner[1], J. Aubrecht[1], M. Kamrádek[1,2], O. Podrazký[1], I. Bartoň[1], F. Todorov[1], Nithyanandan Kanagaraj[1,3], I. Kašík[1] and P. Honzátko[1] ([1]*Institute of Photonics and Electronics of the Czech Academy of Sciences,* [2]*Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Prague;* [3]*Optoelectronic Research Centre, University of Southampton, UK*)
Novel geometries and layouts of double-clad fibers for fiber lasers **(invited)**

14[30] S. S. Aleshkina, M. E. Likhachev (*A.M. Prokhorov GPI RAS, E.M.Dianov FORC, Moscow*)
Yb-doped fiber lasers emitting in spectral region near 0.98 μm **(invited)**

15[00] S.M. Popov[1], O.V. Butov[2], A.P. Bazakutsa[2], M.Yu. Vyatkin[1], A.A. Fotiadi[3,4], Yu.K. Chamorovsky[1] ([1]*V.A. Kotelnikov IRE Fryazino Branch, RAS, Moscow;* [2]*V.A. Kotelnikov IRE, RAS, Moscow;* [3]*Ulyanovsk State University, Ulyanovsk;* [4]*University of Mons, Belgium*)
Artificial Rayleigh fiber and its lasers' application

15[20] V.A. Kamynin [1], A.D. Zverev [1,2], S.A. Filatova [1], A.I. Trikshev [1], Yu.G. Gladush[3], A.G. Nasibulin [3,4], V.B. Tsvetkov [1] ([1]*A.M. Prokhorov GPI, RAS,* [2]*M.V. Lomonosov Moscow State University, Moscow,* [3]*Skolkovo Institute of Science and Technology, Moscow;* [4]*Aalto University, Finland*)
Dumbbell-shaped ultrashort-pulse fiber lasers in 2 micron spectral range

15[40] S.A. Filatova[1], V.A. Kamynin[1], V.V. Koltashev[2], B.I. Galagan[1], S.E. Sverchkov[1], V.V. Dorofeev[3], S.E. Motorin[3], V.B. Tsvetkov[1], B.I. Denker[1] ([1]*A.M. Prokhorov GPI, RAS;* [2]*A.M. Prokhorov GPI, RAS E.M., Dianov FORC, Moscow;* [3]*G.G. Devyatykh ICHPS, RAS, Nizhny Novgorod*)

Amplification of pulsed radiation at a wavelength of 2.27 μm in a Tm3+- doped tellurite fiber

16^{00} - 16^{30} Company presentations

Chair: V. A. Kamynin

16^{30} A.A. Surin[1], I.V. Shebarshina[2], A.A. Molkov[1,2], K.Yu. Prusakov[1,2] (*[1]NTO IRE-Polus, Fryazino; [2]Moscow Institute of Physics and Technology (State University), Moscow*)

Single-mode pumping of a high-power amplifier for single-mode cw narrow-band radiation on a low-mode active ytterbium fiber as a method of increasing the mode instability threshold

16^{50} R.V. Drobyshev, I.A. Lobach, S.I. Kablukov (*IA&E SB RAS, Novosibirsk*)

Characterization of dynamic gratings of population inversion in a Yb-doped fiber

17^{10} E.K. Kashirina[1,2], I.A. Lobach[1], S.I. Kablukov[1] (*[1]IA&E SB RAS, [2] Novosibirsk State Technical University, Novosibirsk)*

Narrow-band linearly-polarized Er-doped fiber laser with wavelength self-sweeping in the range of 1.6 μm

17^{25} A.D. Vladimirskaya[1,2], I.A. Lobach[1], S.I. Kablukov[1] (*[1]IA&E SB RAS, [2] Novosibirsk State Technical University, Novosibirsk)*

Linearly-polarized Ho-doped fiber laser with wavelength self-sweeping in the range of 2.09 um

17^{40} A.A. Surin[1], N.V. Kovalenko[1,2] (*[1]NTO "IRE-Polyus", Fryazino*; *Moscow Institute of Physics and Technology (SU), Moscow*)

Effect of output power saturation of Er-Yb fiber lasers

18^{00} A.A. Rybaltovsky[1], D.S. Lipatov[2], M.E.Belkin[3], O.V. Butov (*[2]V.A. Kotelnikov IRE, RAS, Moscow; [2]G.G. Devyatykh ICHPS, RAS, Nizhny Novgorod; MIREA- Russian University of Technology, Moscow*)

Single-frequency fiber laser with short resonator fabricated in photosensitive Er/Yb phosphosilicate fiber

18^{20} M. I. Skvortsov[1], A. A. Wolf[l], A. A. Vlasov[1], K. V. Proskurina[1], A. V. Dostovalov[1], O. N. Egorova[2], B. I. Galagan[2], S. E. Sverchkov[2], B. I. Denker[2], S. L. Semjonov[3] , S. A. Babin[1] (*[1]IA&E SB RAS, Novosibirsk; [2]A.M. Prokhorov GPI, RAS; [3]A.M. Prokhorov GPI, RAS, E.M.Dianov FORC, Moscow*)

5-mm distributed feedback laser based on composite fiber heavily doped with Er^{3+} ions

18^{40} * I.A. Nechepurenko[1,2], A.A. Rybaltovsky[2], A.V. Dorofeenko[1,2,3,4], O.V. Butov[2] (*[1]N.L.Dukhov VNIIA, Moscow, [2]V.A. Kotelnikov IRE, RAS, Moscow, [3]Institute for Theoretical and Applied Electromagnetics, RAS, [4]Moscow Institute of Physics and Technology, Moscow*)

Noise influence on pulse generation regime of a heavily doped erbium fiber laser

September 22, 2020

Section 2. Pulsed fiber and hybrid lasers, high-energy and ultra-short pulses

Chair: D. S. Kharenko

11^{00} B.N. Nyushkov[1,2], A.V. Ivanenko[1], S.V. Smirnov[1], S.M. Kobtsev[1] ([1]*Novosibirsk State University,* [2] *Novosibirsk State Technical University, Novosibirsk*)

Fiber cavity laser employing semiconductor amplifier and electro-optic coupler for generation of arbitrarily shaped pulses

11^{15} B.N. Nyushkov[1,2], S.V. Smirnov[1], A.V. Ivanenko[1], A.Yu. Kutischeva[2], I.I. Korel[2], S.M. Kobtsev[1] ([1]*Novosibirsk State University,* [2] *Novosibirsk State Technical University, Novosibirsk*))

Pulse narrowing in synchronously pumped ytterbium fibre lasers

11^{30} N.A. Koliada[1], V.S. Pivtsov[1,2], A.S. Dychkov[1], S.A. Farnosov[1], S.A. Kuznetsov[1], A.A. Filonov[1], D.Y. Ptimakov[1] ([1]*Institute of Laser Physics, SB RAS, Novosibirsk,* [2]*Novosibirsk State Technical University, Novosibirsk*)

Stabilization of a fiber femtosecond frequency comb to an optical frequency standard based on a single ytterbium ion

11^{50} V.A. Burdin (*Povolzhskiy State University of Telecommunications and Informatics, Samara*)

Propagation simulation of ultra-short high-power pulse in birefringent single mode optical fiber

12^{10} A.D. Zverev[1,2], V.A. Kamynin[2], S.A. Filatova[2], Y.G. Gladush[3], A.G. Nasibulin[3,4], B.I. Denker[2], B.I. Galagan[2], S.E Sverchkov[2], V.B. Tsvetkov[2], S.L. Semjonov[5] ([1]*M.V. Lomonosov Moscow State University,* [2]*A.M. Prokhorov General Physics Institute, RAS,* [3]*Skolkovo Institute of Science and Technology, Moscow;* [4]*Aalto University, Espoo, Finland;* [2]*A.M.Prokhorov General Physics Institute, RAS, E.M. Dianov FORC, Moscow)*

Erbium fiber laser with passive mode locking and pulse repetition rate of 150 MHz

12^{25} I.A. Volkov[1], V.A. Kamynin[2], S.N. Ushakov[1,2], K.N. Nishchev[1], V.B. Tsvetkov[2] ([1]*N.P.Ogarev Mordovia State University, Saransk, Russia;* [2]*A.M. Prokhorov General Physics Institute, RAS, Moscow*)

Formation of wave packets with high pulse energy during the generation of random pulses in fiber lasers

12^{40} A.Z. Sahabutdinov[1], V.I. Anfinogentov[1], O.G. Morozov[1], V.A. Burdin[2], A.V. Burdin[2] ([1]*A. N. Tupolev Kazan National Research Technical University — KAI, Kazan;* [2]*Povolzhskiy State University of Telecommunications and Informatics, Samara*)

Numerical integration of a system of coupled nonlinear Schrödinger equations

13^{00} – 14^{00} break

Chair: A.V. Ivanenko

14^{00} I. Kudelin[1], S. Sugavanam, M. Chernysheva[2] ([1]*Aston Institute of Photonic Technologies, Aston University, UK;* [2]*Leibniz Institute of Photonic Technology, Jena, Germany*)

Real-time pulse dynamics in bidirectional mode-locked fibre lasers **(invited)**

14^{30} F. Sanchez[1], M. Kemel[1], A. Nady[1,2], G. Semaan[1], M. Salhi[1] and A. Komarov[3] (*[1]Laboratoire de Photonique d'Angers, Faculté des Sciences, Angers; [2]Department of Physics, Faculty of Sciences, Beni-Suef University, Egypt; [3]Institute of Automation and Electrometry, SB RAS, Novosibirsk*)

On the coherence of dissipative soliton resonance square pulses **(invited)**

15^{00} A.M. Smirnov[1,2], O.V. Butov[1] (*[1]Institute of Radio-engineering and Electronics, RAS, Moscow, [2]M.V. Lomonosov Moscow State University)*

Features of passive mode-locking in a heavily-doped ytterbium fiber laser

15^{20} I.V.Zhluktova[1], V.A. Kamynin[1], N.R. Arutyunyan[1], A.S. Pozharov[1], A.I. Trikshev[1], S.A. Filatova[1], E.D. Obraztsova[1], V.B. Tsvetkov[1] (*[1]A.M. Prokhorov General Physics Institute, RAS, Moscow*)

A source of subpicosecond pulses in the visible spectral range based on a ytterbium fiber laser with hybrid mode locking

15^{40} I.O. Zolotovskii, D.A. Korobko, V.A. Lapin, P.P. Mironov, D.I. Sementsov, M.S. Yavtushenko, D.G. Sannikov (*Ulyanovsk State University, Ulyanovsk*)

Ultrashort pulse generation affected by modulation instability

15^{55} - 16^{00} break

Section 3. Nonlinear conversion of fiber laser radiation: SRS, SBS, parametric generation, harmonics generation, generation of THz radiation

Chair: S. A. Babin

16^{00} Y. Feng (*Shanghai Institute of Optics and Fine Mechanics, CAS, Shanghai, China*)

Wavelength-agile fiber amplifiers for quantum technology (**invited**)

16^{30} A. A. Fotiadi[1,2,3], V. V. Spirin[4], J.L. Bueno-Escobedo[4], P. Mégret[2], D. A. Korobko[1], I.O.Zolotovskii[1] (*[1]Ulyanovsk State University, Russia; [2]University of Mons, Belgium; [3]Ioffe Physical-Technical Institute of the RAS, St. Petersburg, Russia; [4]Scientific Research and Advanced Studies Center of Ensenada (CICESE), México*)

Stabilizing Brillouin Fiber Lasers (**invited**)

17^{00} V. L. Kalashnikov[1], S. Wabnitz[1,2] (*[1]Sapienza university of Rome, Italy, [2]Novosibirsk State University, Russia*)

Spatiotemporal Mode-Locking in a Fiber Laser **(invited)**

17^{30} D.S. Kharenko [1], I.S. Zhdanov[1,2], M.S. Mishevsky[2], A.E. Bednyakova[2,3] ([1]*IA&E, SB RAS, Novosibirsk; [2]Novosibirsk State University, Novosibirsk; [3]ICT, SB RAS, Novosibirsk)*

Amplification of Raman dissipative solitons in phosphorosilicate fibers

17^{45} Yu.A. Mazhirina[1], L.A. Melnikov[1], A.A. Sysoliatin[2] (*[1]Yuri Gagarin State Technical University of Saratov, Russia*, [2]*Prokhorov General Physics Institute RAS, Moscow*)

Modulation instability and parametric amplification in fibers with dispersion varying along the length

18^{05} I.O. Zolotovskii, A.S. Kadochkin, V.A. Lapin, D.G. Sannikov, M.S. Yavtushenko (*Ulyanovsk State University, Ulyanovsk*)
Amplification of chirped wave packets in a medium with a traveling wave of the refractive index

18^{20} – 19^{00} Company presentations

19^{00} – 20^{10} Poster session (announcements – 3 min per poster)

*C1. I.V. Doronin, A.A. Zyablovsky, E.S. Andrianov, A.A. Pukhov, A.P. Vinogradov (*The federal state unitary enterprise Dukhov automatics research institute, Moscow*)
The lasing without population inversion in a system with parametric instability.

C2. **A**.I. Trikshev, V.A. Kamynin, V.B. Tsvetkov, V.V. Bukin, T.V. Dolmatov, B.D. Ovcharenko *(Prokhorov general physics institute of the Russian academy of sciences, Moscow)*
Hybrid source of arbitrary form nanosecond pulses with energy up to 50 mJ.

C3. O.V. Shtyrina, I.A. Yarutkina, A.S. Skidin, M.P. Fedoruk (*Novosibirsk state university, Novosibirsk*)
Theoretical analysis of periodical amplification in fiber lasers

C4. A.S. Skidin, O.S. Sidelnikov, M.P. Fedoruk (*Novosibirsk state university, Novosibirsk*)
Theoretical analysis of signal transmission quality in fiber-optic communication line.

C5. E.S. Zaytseva[1], A.V. Bourdine[1,2,3], V.A. Burdin[1] ([1]Povolzhskiy State University of Telecommunication and Informatics, Samara; [2]S.I.Vavilov State Optical Institute, Saint Petersburg; [3]LLC «LinkIn Tech»)*
MIMO application to detection nonreflecting events on reflectograms of optical fibers of cable lines

C6. A.V. Ivanenko[1], B.N. Nyushkov[1,2], S.V. Smirnov[1], D.B. Lutsenko[1], M.G. Dyatlov[1], S.M. Kobtsev[1] **(**[1]*Novosibirsk state university, Novosibirsk;* [2]*Novosibirsk state technical university, Novosibirsk)*
Dissipative solitons with controllable duration of sub-pulses

C7. K.V. Serebrennikov, I.V. Petenev, A.Y. Kokhanovskiy (*Novosibirsk state university, Novosibirsk*)
Investigation of the temperature influence on the mode locked regime of the fiber resonator with dispersion Fourier transformation method

C8. I.A. Lobach, S.I. Kablukov, E.V. Podivilov (*IA&E SB RAS, Novosibirsk)*
Analytical model for single-frequency self-sweeping fiber laser

C9. A.M. Volikova, N.N. Smolyaninov, I.A. Lobach, S.I. Kablukov (*IA&E SB RAS, Novosibirsk)*
Laser rangefinder based on self-sweeping Yb-doped fiber laser

C10. A.E. Budarnykh, I.A. Lobach, S.I. Kablukov (*IA&E SB RAS, Novosibirsk)*
Operating modes in self-sweeping Tm-doped fiber laser

C11. A.A. Antropov, V.D. Efremov, E.A. Evmenova, D.S. Kharenko (*Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia*)

Modelling of the fiber optical parametric generator for CARS

C12. I.O. Zolotovskii[1], R.V. Gumeniuk[1,2], P.A. Itrin[1], D.A. Korobko[1], M.A. Odnoblyudov[3], A.B. Petrov[3,4], B.A. Ribenek[1] и D.A. Stolyarov[1] (*[1]Ulyanovsk State University, Ulyanovsk; [2]Tampere University, Finland; [3]Peter the Great St. Petersburg Polytechnic University, [4]ITMO University, St. Petersburg*)

Ring fiber laser with a hybrid harmonic mode-locking and repetition rate up to 12 GHz

C13. I.S. Chekhovskoy[1,2], O.V. Shtyrina[1,2], M.P. Fedoruk[1,2] *([1]Novosibirsk State University, Russia; [2]Institute of Computational Technologies SB RAS, Novosibirsk, Russia)*

Nonlinear coherent addition of the pulses with twisted multicore waveguides

C14. E.V. Sedov[1], *I.S. Chekhovskoy*[1,2] ([1] *Novosibirsk State University, Russia; [2]Federal Research Center for Information and Computational Technologies, Novosibirsk*)

Application of neural network to find the discrete spectrum of the direct Zakharov-Shabat problem

C15. V.D. Efremov, A.A. Antropov, D.S. Kharenko (*Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia*)

Ultrashort pulses pedestal suppression with nonlinear amplification loop mirror

C16. D.V. Kudashkin, I. D. Vatnik, D.V. Churkin (*Novosibirsk State University*)

Whispering gallery modes on the surface of an optical fiber reflecting from its end

C17. V.S. Terentyev[1], A.V. Dostovalov [1], A.N. Seryoznov[2], A.B. Kuznetsov[2], V.A. Simonov[1], A.A. Wolf[l], M.I. Skvortsov[1], S.A. Babin[1] (*[1] IA&E SB RAS, [2]Chaplygin Siberian Aviation Research Institute, Novosibirsk*)

Registration of acoustic emission signals in composite materials by fs laser written fiber-optic sensors

C18. S.L. Mikerin, V.D. Ugozhaev (*Institute of Automation and Electrometry SB RAS, Novosibirsk*)

Double-beam interferometer based on a quartz beam splitting unit
with a fixed photodetector and imitation of rotational tuning

C19*. A.S. Usachev[1,2], A.A. Grigoriev[1], M.A.Talalaev[2], K.A.Makhnyr[2] (*[1]Moscow Institute of Physics and Technology, [2] "Street Lasers" LLC, Moscow*)

Acousto-optic laser projectors based on fiber lasers

C20. M.V. Ponarina, A.G. Okhrimchuk, P.A. Obraztsov (*A.M. Prokhorov General Physics Institute, RAS, Moscow*)

Switching between single- and dual-wavelength generation in passively mode-locked Nd: YAG waveguide laser

C21. D.E.Praporshikov, K.A. Volkov, A.V. Bourdine, V.A. Burdin (*Povolzhsky State University of Telecommunications and Informatics, Samara*)

Mode coupling coefficients of curved few-mode optical fiber

C22. I.O. Zolotovsky[1,2], S.G. Moiseev[1,2,3], A.S. Kadochkin[1,2], Yu.S. Dadoenkova[1,3], F.F.L. Bentivegna[3] (*[1]Ulyanovsk State University, Ulyanovsk; [2]Institute of Nanotechnology of Microelectronics, RAS, Moscow; [3]Ulyanovsk Branch of V.A.Kotelnikov Institute of Radio Engineering, RAS, Ulyanovsk; [4]Lab-STICC, ENIB, Brest, France*)

Generation of surface plasmon polaritons in a current-pumped carbon nanotube

20^{10} – 21^{00} Discussions with poster presenters

September 23, 2020

Section 3. Nonlinear conversion of fiber laser radiation: SRS, SBS, parametric generation, harmonics generation, generation of THz radiation

Chairs: D. V. Churkin, I. D. Vatnik

11^{00} M.D. Gervaziev[1,2], D.S. Kharenko[1,2], I. Zhdanov[1,2], V.A. Gonta[1,2], E.V. Podivilov[1,2], S.A Babin[1,2], S. Wabnitz[1,3] (*[1]Novosibirsk State University, [2]Institute of Automation and Electrometry SB RAS, Novosibirsk; [3]DIET, Sapienza University of Rome, Italy*)

Mode decomposition of laser beam propagated in a multimode fiber in the Kerr self-cleaning regime

11^{15} A.G. Kuznetsov[1], S.I. Kablukov[1], E.V. POdivilov[1,2], S.A. Babin[1,2] (*[1]IA&E SB RAS, Novosibirsk, [1]Novosibirsk State University)*

Pump depletion and beam clean-up at Raman generation in a multimode graded-index fiber

11^{30} O.S. Sidelnikov[1], E.V. Podivilov[1,2], S.A. Babin[1,2], M.P. Fedoruk[1,3] (*[1]Novosibirsk State University, [2]Institute of Automation and Electrometry SB RAS, Novosibirsk; [3]Institute of Computational Technologies SB RAS, Novosibirsksia)*

Numerical simulation of the self-cleaning effect in a GRIN multimode fiber in case of pump and Stokes waves propagation

11^{45} A.V. Dostovalov[1], M.I. Skvortsov[1], A.A. Wolf[1], V.I. Labuntsov[1,2], O. N. Egorova[3], S.L. Semyonov[4], S.A. Babin[1] (*[1] IA&E SB RAS, [2] Novosibirsk State University, Novosibirsk; [3]A.M. Prokhorov General Physics Institute, RAS, [4]A.M. Prokhorov General Physics Institute, E.M.Dianov FORC, Moscow*)

Raman laser based on a 7-core fiber with cross-coupling between the cores

12^{00} A. V. Gladyshev, Yu.P. Yatsenko, A.N. Kolyadin, I. A. Bufetov (*A.M. Prokhorov GPI, RAS, E.M.Dianov FORC, Moscow)*

Two-cascaded Raman conversion 1030 → 1490 → 2680 nm of chirped picosecond pulses in revolver-type waveguide filled by deuterium

12^{20} Yu. A. Mazhirina[1], L.A.Melnikov[1], A.I.Konyukhov[2], A.A. Sysolyatin[3], K.S. Gochelashvili[3], D.Venkitesh[4], S.Sarkar[4] (*[1]Yuri Gagarin State Technical University, Saratov, [2]N.G.Chernyshevsky Saratov State University, Saratov; [2]Prokhorov General Physics Institute RAS, Mosco*; *РАН, Москва; [4]Indian Institute of Technology, Chennai, India*)

SBS in W-shaped fibers with periodic variation of dispersion along the fiber

12[40] N.A. Nikolaev[1], A.A. Mamrashev[1], G.V. Lanskii[2], V.D. Antsygin[1], Y.M. Andreev[2,3] (*[1]Institute of Automation and Electrometry SB RAS, Novosibirsk; [2]Institute of Monitoring of Climatic and Ecological Systems SB RAS, Novosibirsk; [3]Tomsk State University, Tomsk*)

Application potential of nonlinear ferroelectric crystals KTiOPO4, KTiOAsO4, and KNbO3 in the millimeter waves

12[55] N.A. Nikolaev[1] , A.A. Mamrashev[1], V.D. Antsygin[1], G.V. Lanskii[2], Y.M. Andreev[2,3] (*[1]Institute of Automation and Electrometry SB RAS, Novosibirsk; [2]Institute of Monitoring of Climatic and Ecological Systems SB RAS, Novosibirsk; [3]Tomsk State University, Tomsk*)

Prospects of generation of terahertz radiation in borate nonlinear crystals

13[10] – 14[00] break

Section 4. Fiber lasers applications: telecommunications, sensors, biomedicine, material processing and modification

Chairs: S.M.Kobtsev, B.N. Nyushkov

14[00] O.S. Sidelnikov[1], A.A. Redyuk[1,2], M.P. Fedoruk[1,2], S.K. Turitsyn[1,3] (*[1] Novosibirsk State University; [2]ICT SB RAS, Novosibirsk; [3]Institute of Photonic Technoligies, Aston University, UK)*

Convolutional neural network application for nonlinear effects compensation in optical fiber transmission system with spectral-division multiplexing

14[20] S.A. *Bogdanov[1], O.S. Sidelnikov[1], M.P. Fedoruk[1,2], S.K. Turitsyn[1,3] ([1]Novosibirsk State University, Russia; [2]Institute of Computational Technologies SB RAS, Novosibirsk; [3]Institute of Photonic Technoligies, Aston University, UK)*

Nonlinearity mitigation in polarization multiplexed fiber-optic transmission system based on fully-connected neural networks

14[35] E.A. Kuprikov[1], A.Yu. Kokhanovskiy[1], O.S. Sidelnikov[1], S.K. Turitsyn[1,2] ([1]*Novosibirsk State University, Russia; [2]Aston Institute of Photonic Technologies, Aston University, UK*)

Optical regeneration of a telecommunication signal with amplitude modulation

14[50] E. G. Shapiro, D. A. Shapiro *([1]Institute of Automation and Electrometry SB RAS, Novosibirsk; [2]Novosibirsk State University, Novosibirsk)*

High-speed, multichannel, variable dispersion compensation link for suppression of nonlinear distortion

15[05] A.V. Pankov[1], I.D. Vatnik[1], D.V. Churkin[1], A.A. Sukhorukov[2] (*[1]Novosibirsk State University, Novosibirsk; [2]Nonlinear Physics Centre, Research School of Physics, Australian National University, Canberra, Australia)*

Optical neural network based on synthetic photonic lattice

15[25] A.V. Pankov[1], O.S. Sidelnikov[1], I.D. Vatnik[1], A.A. Sukhorukov[2], D.V. Churkin[1] (*[1]Novosibirsk state university, Novosibirsk; [2]Nonlinear Physics Centre, Research School of Physics, Australian National University, Canberra, Australia*)

Optical signal equalization in a dispersive optical telecommunication line with synthetic photonic lattice

15[40] V.A. Andreeev[1], A.V. Burdin[1,2], V.A. Burdin[1], M.V. Dashkov[1] (*[1]Povolzhskiy State University of Telecommunication and Informatics, Samara; [2]S.I.Vavilov State Optical Institute, Saint Petersburg)*

Acoustic diagnostics of optical fibers strength in the cable

15[55] A.V. Burdin[1,2,3], V.A. Burdin [2], K.V. Dukelskiy[1], O.E. Naniy[4], T.O. Bazarov[4], V.V. Demidov[1], A.E. Zhukov[2], D.D. Starykh[4] ([1]*S.I.Vavilov State Optical Institute, Saint Petersburg; [2]Povolzhskiy State University of Telecommunication and Informatics, Samara; [3] "OptoFiber Lab" Ltd., [4]"T8" Ltd., Moscow)*

A new class of multi-mode fibers with diameter of 100 um for compact multi-gigabyte communication networks for various purposes

16[10] – 16[15] Coffee break

Chair: A.V. Dostovalov

16[15] ---

16[45] S.L.Semenov, A.F.Kosolapov *(A.M. Prokhorov General Physics Institute, RAS, E.M. Dianov FORC, Moscow)*

*T*hermal resistance of optical fibers with special coatings

17[05] A.A. Sysolytin *(A.M.Prokhorov General Physics Institute, RAS, Moscow)*

New concepts of quantum technologies for transmission and processing of big data **(tutorial)**

17[25] ---

17[45] D.R. Kharasov[1,2], E.A. Fomiryakov[1,3], O.E. Nanii[1,3], S.P. Nikitin[1], V.N. Treshchikov[1] *([1]T8 Sensor LLC, [2]Moscow Institute of Physics and Technology, Dolgopurdny, [3]M.V. Lomonosov Moscow State University, Faculty of Physics, Moscow)*

Compact lasers with narrow linewidth for distributed fiber optic sensors

18[05] A.A. Wolf[1,2], V.A. Simonov[2], A.V. Dostovalov[1,2], V.S. Terentyev[2], O. N. Egorova[3], S.G. Zhuravlev[4], S.L. Semyonov[4], S.A. Babin[1,2] ([1]*Novosibirsk State University, [2]IA&E SB RAS, Novosibirsk; [3]A.M. Prokhorov General Physics Institute, RAS, [4] E.M.Dianov FORC, Moscow*)

Spatial multiplexing of fiber optic acoustic sensors

18[25] A.Yu. Tkachenko, N.N. Smolyaninov, M.I. Skvortsov, I.A. Lobach, S.I. Kablukov (*IA&E SB RAS, Novosibirsk)*

FBG-sensors interrogation with coherent optical frequency-domain reflectometer based on self-sweeping fiber laser

18[45] A.E. Budarnykh[1], I.A. Lobach[1], S.I. Kablukov[1,2], P.L. Chapovsky[1] (*IA&E SB RAS, Novosibirsk, [2]Novosibirsk State University, Novosibirsk*)

Detection of nuclear spin isomers of water using self-sweeping Tm-doped fiber laser

19[00] M.V. Dashkov (*Povolzhskiy State University of Telecommunication and Informatics, Samara*)

Acoustic sensor based on few-mode optical fibers

19[20] * O.G. Morozov[1], I.I. Nureyev[1], A. Z. Sakhabutdinov[1], R.S. Misbakhov[2], A.A. Kuznetsov[1] ([1]*Kazan National Research Technical University,* [2]*Kazan State Power Engineering University, Kazan*)

Unaddressed, addressable, coded and random fiber Bragg gratings. Applications in fiber lasers and microwave photonics sensor systems

September 24, 2020

Section 4. Fiber lasers applications: telecommunications, sensors, biomedicine, material processing and modification

Chair: I.S. Shelemba

11[00] A. Kuchmizhak[1,2], A. Zhizhchenko[1,2], S. Makarov[3] ([1]*Institute for Automation and Control Processes,* [2]*Far Eastern Federal University, Vladivostok;*[3] *ITMO University, St. Petersburg, Russia*)

Direct femtosecond-laser projection lithography on perovskites for advanced nanophotonic applications **(invited)**

11[30] D.A. Belousov, A.V. Dostovalov, V.P. Korolkov, S.L. Mikerin, K.A. Bronnikov, S.A. Babin (*IA&E SB RAS, Novosibirsk*)

High-performance formation of TLIPSS on thin Hf films with an femtosecond laser astigmatic Gaussian beam

11[50] Yu.N. Kulchin[1], A.I. Nikitin[2], E.P. Subbotin[3] ([1]*Institute of Automation and Control Processes, Far Eastern Branch of RAS, Vladivostok*)

Laser underwater cleaning of hulls of sea vessels

Laser Underwater Cleaning of Hulls of Sea Vessels

12[10] Yu.N. Kulchin, P.A. Nikiforov, A.I. Nikitin, D.S. Pivovarov, D.S. Yatsko, V.A. Timchenko (*Institute of Automation and Control Processes, Far Eastern Branch, Russian Academy of Sciences, Vladivostok*)

Laser additive manufacturing of bioresorbable magnesium implants and methods of its automation

12[30] – 13[30] **company presentations**

13[30] – 14[00] **break**

Section 5. Laser optics and components: fibers, fiber and hybrid resonator elements, diffraction and integrated optics
Chairs: V.P.Korolkov, A.V. Dostovalov

14^{00} A.K. Fedorov (*Russian Quantum Center, Moscow Institute of Physics and Technology, Moscow)*
Quantum-optical technologies for processing and transmission of data

14^{20} T.A. Kochergina, S.S. Aleshkina, M.M. Bubnov, M.E. Likhachev (*A.M. Prokhorov GPI, RAS, E.M.Dianov FORC, Moscow*)
Spectrally selective suppression of fundamental mode of the core for fiber waveguide with absorbing rods

14^{40} M.M.Khudyakov[1,2], V.V.Alekseyev[1], D.S.Lipatov[3], A.N.Guryanov[3], V. Temyanko[4], M.M. Bubnov[1], M.E. Likhachev[1] ([1]*A.M. Prokhorov GPI, RAS, E.M.Dianov FORC, Moscow*; [2]*Moscow Institute of Physics and Technology, Moscow;* [3]*G.G. Devyatykh ICHPS, RAS, Nizhny Novgorod;* [4]*College of Optical Sciences, University of Arizona, USA)*
Fiber waveguide with shifted core for SBS suppression

15^{00} AV. Burdin[1,2,3], K.V. Dukelsky[1], V.V. Demidov[1], E.V. Ter-Nersesyanz[1] ([1]*SC "S.I.Vavilov NPO GOI", [2]Povolzhskiy State University of Telecommunication and Informatics, Samara;* [3] *"OptoFiber Lab" Ltd*)
Microstructured fiber waveguides with induced chirality

15^{20} D.A. Avtaykin, E.V. Borisov, V.A. Velikanov, I.V. Galushka, A.V. Kuznechikhin, G.T. Mikaelyan, V.A. Panarin, S.N. Sokolov, T.D. Tokareva (*RME "Inject" LLC, Saratov*)
Laser diode module of high energy brightness with fiber optic output LMD-50

15^{35} V.A.Razukov, L.A. Melnikov (*Yuri Gagarin Saratov State Technical University, Saratov*)
Two-wave Ring Nonlinear Fibre Microcavity Spatio-Temporal Dynamics Modelling

15^{50} V.P. Korolkov, A.G. Sedukhin, R.K. Nasyrov, R.V. Shimansky, V. N. Khomutov1, A. E. Kachkin, A.E. Matochkin (*IA&E SB RAS, Novosibirsk*)
Possibilities of modern laser lithography for the synthesis of micro- and nanostructured planar optical elements

16^{05} V. P. Korolkov[1], R. I. Kuts[1,2], A. I. Malyshev[1], A. E. Matochkin[1], D. A. Belousov[1]
([1]IA&E SB RAS, Novosibirsk, [2] Novosibirsk State University)
Formation of diffraction structures on zirconium films using laser recording and reactive ion etching

16^{25} S. Mujica-Ascencio[1], Rafael Sanchez-Lara[2], F. Martinez-Pinon[1], J.R. Ek-Ek[1,3], H.L. Offerhaus[3] and J. A. Alvarez-Chavez[3] ([1]*Instituo Politécnico Nacional (IPN) - Centro de Investigación e Innovación Tecnológica (CIITEC), Azcapotzalco, México,* [2]*Universidad Autónoma del Carmen, Campeche, México;* [3]*University of Twente – Optical Sciences Group, Enschede, the Netherlands*).
Yb-doped, Q-switched fiber laser for port-wine stain time dosage determination: Monte Carlo simulation and design **(invited)**

16^{55} – 17^{00} break

Joint session with "Optical Reflectormetry 2020» conference

Chair: I. A. Lobach

17^{00} Andrei A. Fotiadi (*Professor, Laboratory Head at Department of Electromagnetism and Telecommunications, Université de Mons, Mons, BELGIUM*)

Distributed measurements of the vibration spectrum with a coherent reflectometer employing self-injection-locked semiconductor laser as a master oscillator

17^{30} Vladimir A. Burdin (*Professor, Department Chair, PSUTI, Samara*)

Algorithms For Processing Of Backscattering Polarization Characteristics Based On Prony Decomposition

17^{45} Huang W.Z., Zhang W.T., Li F.

Research on temperature compensation of ultra-high-resolution FBG static strain sensor in crustal deformation observation

18^{00} Zhang W.T., Huang W.Z., Wang Y.B., Zhang J.X., Lv B., Yao Y., Li F.

Field Test Of Broadband Fiber Optic Interferometric Seismometer With Modulation Depth Feedback Control

18^{15} Workshop closing

(* - virtual talk is not confirmed by 15.09)