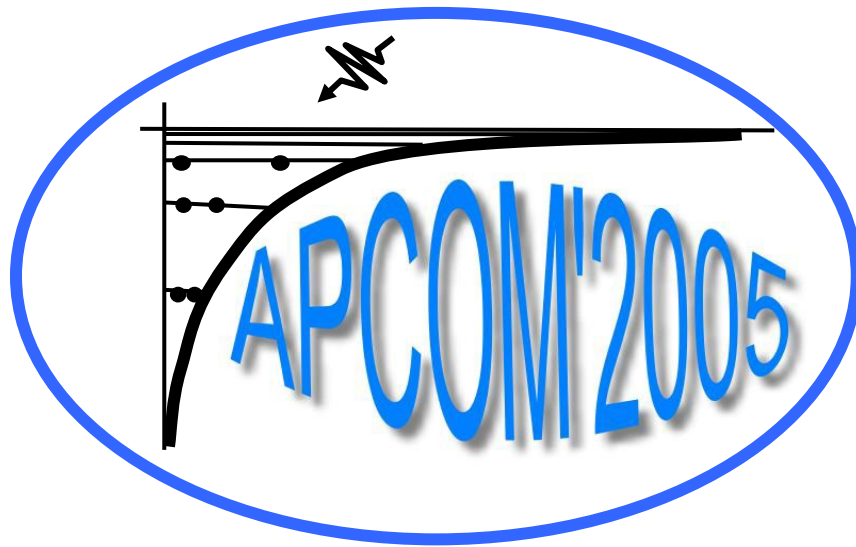


Fifth Asia-Pacific Conference



Fundamental problems of opto – and microelectronics

ADVANCE PROGRAM

Vladivostok, Russia

September 12 - September 14, 2005

ORGANIZED BY

INSTITUTE FOR AUTOMATION AND CONTROL PROCESSES Far Eastern Branch of Russian Academy of Science (RAS), Vladivostok, Russia

Director: Corresponding Member of Russian Academy of Science, Prof. Yu. N. Kulchin

FAR EASTERN STATE TECHNICAL UNIVERSITY, Vladivostok, Russia

President: Prof. G. P. Turmov

MARITIME STATE UNIVERSITY

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Program of APCOM'2005 VLADIVOSTOK

12 September 2005 (Monday)

15:00-17:30	Conference Registration	Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50)
17:30-19:30	Get Together	Café "Mess-room" (Svetlanskaya, 48)

13 September 2005 (Tuesday)

08:30-09:30	Conference Registration	Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50)
09:30-10:15	Conference Opening	Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50)

INVITED SESSION

Chair: Academician of RAS, Prof. O.N. Krokhin, Russia.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

01	RYDBERG-LIKE STATE OF MATTER FORMED BY RYDBERG ATOMS Eduard A. Manykin (Moscow Engineering Physics Institute (state university), Russia)	10:30-11:00
02	CREATION OF POPULATION INVERSION DUE TO INEQUALITY OF ABSORPTION AND INDUCED EMISSION PROBABILITIES Anatoly M. Shalagin (IAE, Novosibirsk, Russia)	11:00-11:30
03	SMART SENSOR NETWORK AND INTEGRATED SYSTEMS OF STRUCTURAL HEALTH MONITORING Jinping Ou (Harbin Institute of Technology, Harbin, P.R.China)	11:30-12:00
	<i>Coffee break</i>	12:00-12:15
04	GEL-COLLOIDAL MEDIUMS FOR HOLOGRAPHY Alexander N. Malov (Irkutsk Higher Military Aviation Engineer School, Russia)	12:15-12:45
05	INFORMATION PROCESSING IN CONNECTED NEURAL NETWORKS Toshihiro Shimizu (Graduate School Engineering, Kokushikan University, Japan)	12:45-13:15
06	INTERACTION OF LIGHT WAVES ON THE REFLECTION GRATINGS IN BISMUTH TITANIUM OXIDE CRYSTALS S. M. Shandarov (State University of Control Systems and Radioelectronics, Tomsk, Russia)	13:15-13:45

Lunch break

13:45-
15:00

SESSION 1. *Optical measuring techniques*

Chair: Academician of RAS, Prof. S. N. Bagaev, Russia.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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|----|---|------------------|
| 07 | SIMULATION OF LASER RADIATION MODULATION BY NONLINEAR RING INTERFEROMETER | 15:00-
15:15 |
| | Pavel E. Denisov, Igor V. Izmailov, Boris N. Poizner (Tomsk State University, Russia) | |
| 08 | LASER SPECTROSCOPY IN THE OCEANOGRAPHY INVESTIGATIONS | 15:15
15:30 |
| | Oleg Bukin, Pavel A. Salyuk, Sergey S. Golik (Pasific Oceanological Institute FEB RAS) | |
| 09 | FOUR-BEAM LIGHT SPLITTING IN Hg_2X_2 (X=Cl, Br, I) CRYSTALS | 15:30 -
15:45 |
| | P. A. Menshikov, D. S. Faleev (Far East State Railway Transportation University, Khabarovsk, Russia) | |
| 10 | THE ANALYSIS OF THE THERMAL EFFECTS ARISING AT INTERACTION OF LASER RADIATION WITH THE MULTILAYERED BIOMATERIAL | 15:45-
16:00 |
| | Ilya Krasnikov, Seteikin Alexey (Amur State University, Blagoveshensk, Russia) | |
| 11 | INVESTIGATIONS OF THE PLASMA PROPAGATION AND PLASMA JETS INTERACTION DURING LASER BREAKDOWN IN THE NORMAL ATMOSPHERE | 16:00-
16:15 |
| | Alexey A. Il'in, Oleg Bukin, Andrey N. Pavlov (Pasific Oceanological Institute FEB RAS) | |
| 12 | LIDAR SOUNDING OF THE ATMOSPHERE AEROSOL DYNAMICS OVER THE OCEAN | 16:15-
16:30 |
| | Andrey N. Pavlov, Oleg Bukin (Pasific Oceanological Institute FEB RAS) | |

EVENING EVENTS

18:00 - 21:00 BANQUET (YACHT "THE HOPE")

14 September 2005 (Wednesday)

SESSION 1. *Optical measuring techniques (continuation)*

Chair: Prof. E.A. Manykin, Russia.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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|----|---|-----------------|
| 13 | DYNAMICS OF HOLOGRAPHIC GEL-COLLOIDAL
DICHROMATED GELATIN RECORDING MEDIUM:
INTERMITTENCY EXPOSURE EFFECT
Alexander N. Malov, Anna V. Neupokoeva (Irkutsk Higher Military
Aviation Engineer School) Svetlana P. Kotova, Vladimir V. Jakutkin,
(P.N. Lebedev Physical Institute of the Russian Academy of Science,
Samara department) | 8:30-
8:45 |
| 14 | DARK AND BRIGHT DISCRETE SOLITONS IN ONE-
DIMENSIONAL PHOTONIC LATTICES IN LITHIUM
NIOBATE
K. Shandarova, V. Shandarov (State University of Control Systems
and Radioelectronics, Tomsk Russia) | 8:45-
9:00 |
| 15 | ADAPTIVE INTERFEROMETER BASED ON DIFFUSION
REFLECTION HOLOGRAM FORMED IN
PHOTOREFRACTIVE CRYSTALL
Roman V. Romashko, Yuri N. Kulchin (Institute of Automation &
Control Processes FEB RAS, Vladivostok, Russia),
Alexei A. Kamshilin (University of Kuopio, Kuopio, Finland) | 9:00-
9:15 |
| 16 | TILTED MIRROR CORRECTOR WITH AXIAL SYMMETRY
Sergey A. Chuprakov (Solar-Earth Physics Institute of Siberian
Division of the Russian Academy of Sciences, Russia) | 9:15-
9:30 |
| 17 | THE KINETICS OF PHOTOREFRACTION LIGHT
SCATTERING IN DOPED LITHIUM NIOBATE CRYSTALS
Vitaliy A. Maksimenko, Elena V. Danilova (Far Eastern State
Transport University, Khabarovsk, Russia) | 9:30-
9:45 |
| 18 | MODELS OF TWO-CIRCUIT RING INTERFEROMETER:
BIFURCATIONS OF STATIC STATES, PHASE PORTRAITS,
MAPS OF FRACTAL DIMENSION
Igor V. Izmailov, Alexander V. Lyachin, Boris N. Poizner, Denis A.
Shergin (Tomsk State University, Tomsk, Russia)
Anton L. Magazinnikov Tomsk (University of Controlling System and
Radioelectronics, Tomsk, Russia) | 9:45-
10:00 |
| 19 | FEATURES OF UV-BLUE-INDUCED OPTICAL
TRANSPARENCY IN LITHIUM NIOBATE WITH SURFACE
DOPING BY Fe AND Cu
Pavel Karpushin, Nadezhda Roskop, Vladimir Shandarov, Christian
Rüter and Detlef Kip | 10:00-
10:15 |

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| 20 | NONLINEAR HOLOGRAPHIC RECORD OF REFLECTION
DIFFRACTION GRATINGS AT TWO-WAVE MIXING ON
HIGH-ORDER SPATIAL HARMONICS IN PHOTOPOLYMER
COMPOSITE MATERIALS | 10:15-
10:30 |
| | S. Sharangovich, E. Dovolnov , S. Ustuzanin, B. Nozdrevatyx
Tomsk State University of Control System and Radioelectronics,
Tomsk, Russia. | |
| 21 | THEORETICAL INVESTIGATION OF THE APODIZED
HOLOGRAPHIC GRATING FORMATION IN LIQUID
CRYSTAL PHOTOPOLYMERIZABLE MATERIALS | 10:30-
10:45 |
| | S. Sharangovich, E. Dovolnov , S. Ustuzhanin, B. Nozdrevatykh
(Tomsk State University of Control System and Radioelectronics,
Tomsk, Russia) | |
| | <i>Coffee break</i> | 10:45-
11:00 |

SESSION 1. *Optical measuring techniques (continuation)*

Chair: Academician of China Engineering Academy

Prof. Jinping Ou, P. R. China.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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| 22 | CORRELATION APPROACH FOR MULTIMODE
INTERFEROMETER SIGNAL PROCESSING BASED UPON
CCD CAMERA | 11:00-
11:15 |
| | Yu. N. Kulchin (Institute of Automation and Control Processes of Far
Eastern Branch of RAS, Vladivostok, Russia),
O. B. Vitrik, A. Lantsov (Far Eastern State Technical University,
Vladivostok, Russia) | |
| 23 | CRACK DETECTION FOR CONCRETE STRUCTURE USING
MULTI-LINE DISTRIBUTED FIBER OPTIC SENSOR
SYSTEM | 11:15-
11:30 |
| | Shuang Hou, Zhi Zhou, Jinping Ou (Harbin Institute of Technology,
Harbin, P.R.China)
A.V. Dyshlyuk, Y. N. Kulchin, O. B. Vitrik (Institute of Automation
and Control Processes of Far Eastern Branch of RAS
Vladivostok, Russia) | |
| 24 | MONITORING OF THE DISTRIBUTED TEMPERATURE
FIELDS | 11:30-
11:45 |
| | Yuri N. Kulchin, Igor V. Denisov (Institute of Automation and Control
Processes of Far Eastern Branch of RAS
Vladivostok, Russia), Viktor A. Sedov, Nelly A. Rybalchenko
(Maritime State University, Vladivostok, Russia) | |
| 25 | SENSOR IS PREPARED USING NEMATIC LIQUID-CRYSTAL
DROPLET MATERIALS | 11:45-
12:00 |
| | Haiguang Zhou, Min Han (Xiamen University of Technology,
Xiamen, P.R.China) | |

26	MATHEMATICAL MODELS OF OPTIC FIBERS MECHANICAL DEFORMATIONS	12:00- 12:15
	Alexander V. Ovchinkin (Irkutskenergosvjaz Ltd, Irkutsk, Russia), Alexander N. Malov (Irkutsk Higher Military Aviation Engineer School (Military Institute), Irkutsk, Russia)	

SESSION 1. *Optical measuring techniques (continuation)*

Chair: Prof. A. N. Malov, Russia.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

27	Z – SCAN INVESTIGATIONS OF PHOTOREFRACTIVE NONLINEARITY WITHIN SPECIALLY DOPED SURFACE LAYER OF LITHIUM NIOBATE	12:15- 12:30
	V. Shandarov, P. Karpushin, A. Shaporev (Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia)	
28	DISCRETE DIFFRACTION OF LIGHT IN TWO- DIMENSIONAL PHOTONIC LATTICES IN LITHIUM NIOBATE	12:30- 12:45
	V. Shandarov, K. Shandarova, S. Shandarov, N. Burimov (State University of Control Systems and Radioelectronics, Tomsk Russia)	
29	CONOSCOPIC FIGURES AT LITTLE DIVERGING BUNS	12:45- 13:00
	Alexandr V. Syuy, Vladimir V. Lihtin (Komsomolsk-on-Amur state technical university, Komsomolsk-on-Amur, Russia)	
30	LOW-POWER ACTIVE RING-RESONATOR ALL-OPTICAL SWITCHES	13:00- 13:15
	Chunfei Li , Guangming Xu, Dou Na , Alireza Bananej (Harbin Institute of Technology, Harbin, P.R.China)	
31	HIGH ACCURACY MEASUREMENT OF CIRCULAR AND RADIAL HARMONICS BY ARRAY OF PHOTODETECTORS WITH SPECIAL TOPOLOGY	13:15- 13:30
	N. N. Evtikhiev, S. N. Litovchenko, A.V. Shevchuk, R. S. Starikov, E. Yu. Zlokazov (Moscow Engineering Physics Institute (state university), Moscow, Russia)	

Lunch break 13:30-
15:00

SESSION 1. *Optical measuring techniques (continuation)*

Chair: Corresponding member of RAS Prof. Yu. N. Kulchin, Russia.

The session will be presented at the Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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| 32 | FIBER OPTIC SLOPE TRANSDUCER FOR STRUCTURAL HEALTH MONITORING
Anton V. Dyshlyuk, Yuri N. Kulchin, Oleg B. Vitrik, Pavel V. Anokhin, Valentin F. Obukh (Far Eastern State Technical University, Vladivostok, Russia) | 15:00-
15:15 |
| 33 | THE DESIGN OF A WIRELESS STRUCTURAL HEALTH MONITORING SYSTEM
Hong Wei Li, Jinping Ou (Harbin Institute of Technology, Harbin, P.R.China) | 15:15-
15:30 |
| 34 | FIBER-OPTIC SENSOR WORKING IN DIGITAL TYPE BY USE OF OPTICAL BISTABILITY DEVICE
Guohui Lv, Hongan Ye, Xu Jiang (Harbin Institute of Technology, Harbin, P.R.China) | 15:30-
15:45 |
| 35 | PRESSURE-SENSITIVITY OF CARBON FIBER CEMENT PASTE AND PRESSURE-SENSITIVE SENSORS
Baoguo Han, Jinping Ou (Harbin Institute of Technology, Harbin, P. R. China) | 15:45-
16:00 |
| 36 | EXPERIMENTAL RESEARCH ON THE COUPLE EFFECTION OF STRAIN AND TEMPERATURE FOR BARE FBG
Zhi Zhou, Zhichun Zhang, Chuan Wang, Jinping Ou (Harbin Institute of Technology, Harbin, P.R.China) | 16:00-
16:15 |
| 37 | PROCESS SPECIFICATIONS RESULTING FROM THERMALPHYSIC INVESTIGATIONS OF SEMICONDUCTOR LASERS
G.T. Mikaelyan (Federal enterprise "Inject", Moscow, Russia) | 16:15-
16:30 |
| 38 | LASER TRACKS IN SOAP AND GELATIN FILMS
Andrey A. Vaichas, Elena V. Shevchenko (Irkutsk state medical university, Irkutsk, Russia),
Alexander N. Malov (Irkutsk Higher Military Aviation Engineer School (Military Institute), Irkutsk, Russia) | 16:30-
16:45 |
| 39 | EFFECT OF TEMPERATURE ON INTERACTION OF LIGHT WAVES ON THE REFLECTION GRATINGS IN (100)-CUT $\text{Bi}_{12}\text{TiO}_{20}:\text{Ca}$ CRYSTAL
N. I. Burimov, S. M. Shandarov, A. A. Kolegov, A. S. Lapoukhov, D. A. Limarev (State University of Control Systems and Radioelectronics, Tomsk, Russia), Yu.F.Kargin, A. V. Egorysheva, V. V. Volkov (N.S. Kurnakov Institute of General and Inorganic Chemistry RAS, Moscow, Russia) | 16:45-
17:00 |

Coffee break

17:00-
17:30

17:30 - 18:30 FINAL CEREMONY OF THE CONFERENCE
(Conference Hall of Presidium of FEB RAS)

SESSION 2. *Optical information processing and neural networks*

Chair: Prof. S. M. Shandarov, Russia.

The session will be presented at the 2-nd Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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| 40 | OPTOELECTRONIC VECTOR-MATRIX PROCESSORS: TECHNICAL LIMITATIONS | 9:00-9:15 |
| | R. S. Starikov (Moscow Engineering Physics Institute (State university), Moscow, Russia) | |
| 41 | SUPERSCALAR 64 BIT RISC MICROPROCESSOR FOR EMBEDDED APPLICATION | 9:15-9:30 |
| | S. I. Ariashev, S. G. Bobkov, P. S. Zubkovasky | |
| 42 | IMAGE FORMATION IN POLYCHROMATIC LIGHT BY LENSLESS OPTICAL-ELECTRONIC SYSTEM BASED ON SPATIAL COHERENCE TRANSFORMATION | 9:30-9:45 |
| | Nikolay N. Evtikhiev, Ivan V. Solyakin, Sergey N. Starikov, Ekaterina A. Shapkarina (Moscow Engineering Physics Institute (state university), Moscow, Russia) | |
| 43 | ROTATE AND SCALE INVARIANT CORRELATION FILTERS FOR PATTERN RECOGNITION | 9:45-10:00 |
| | N. N. Evtikhiev, P.A. Ivanov, B.M. Reyzin, A.V. Shevchuk, S.I. Sirotkin, R.S. Starikov, A.V. Zaharcev, E.Yu. Zlokazov (Moscow Engineering Physics Institute (state university), Moscow, Russia) | |
| 44 | THE SPATIAL FILTERS THIRD COORDINATE USING FOR THE OPTICAL IMAGE PROCESSING | 10:00-10:15 |
| | Arthur N. Borodin, Alexander N. Malov (Irkutsk Higher Military Aviation Engineer School (Military Institute), Russia) | |
| 45 | OPTIMAL ALGORITHM OF A BINARY SIGNAL DETECTION FOR MULTIBEAM PROPAGATION | 10:15-10:30 |
| | Igor A. Sinitsyn, Alexander Malov, Yuri V. Morzhuev (Irkutsk Higher Military Aviation Engineer School (Military Institute), Russia) | |
| 46 | FIBER-OPTIC SENSOR FOR MONITORING OF DEFORMATIONAL PROCESSES RUNNING IN NATURAL AND ARTIFICIAL OBJECT | 10:30-10:45 |
| | Yu. Petrov, O. Kamenev, Yu. N. Kulchin, (Far Eastern State Technical University, Vladivostok, Russia) | |
| | <i>Coffee break</i> | 10:45-11:00 |
| 47 | DYNAMIC IMAGES RECOGNIZING BY DISTRIBUTED MEASURING SYSTEM OF SEGMENT TYPE | 11:00-11:15 |
| | Yu.N. Kulchin (Institute of Automation and Control Processes of FEB of RAS, Vladivostok, Russia), A.Yu. Kim (Far Eastern State Technical University, Vladivostok, Russia) | |

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| 48 | APPLICATION OF NEURAL NETWORKS TO DATA RECONSTRUCTION OF FIBER-OPTIC TOMOGRAPHY
A.V. Panov, I.V. Denisov, Yu.N. Kulchin, N.A. Rybalchenko (Institute of Automation and Control Processes FEB of RAS, Vladivostok, Russia) | 11:15-
11:30 |
| 49 | FORMATION OF KNOWLEDGEBASE OF THE DISTRIBUTED PHYSICAL FIELDS
Igor V. Denisov, Ilya K.Vernigora, Dmitry Yu. Zolotareno (Maritime State University, Vladivostok, Russia) | 11:30-
11:45 |
| 50 | GENETIC ALGORITHM OF THE INTELLIGENT CLASSIFIER
Igor V. Denisov, Dmitry Yu. Zolotareno, Ilya K.Vernigora (Institute of Automation and Control Processes of Far Eastern Branch of RAS, Vladivostok, Russia) | 11:45-
12:00 |

SESSION 3. Physics in nanoelectronics analysis and synthesis & Nano-structured waveguides

Chair: Corresponding member of RAS Prof. A. M. Shalagin, Russia.

The session will be presented at the 2-nd Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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| 51 | ASIC DESIGN FLOW BY AN EXAMPLE DEVELOPMENT OF PERIPHERAL CONTROLLERS
S.G. Bobkov, B.E. Evlampiev | 13:00-
13:15 |
| 52 | THE OPERATOR TECHNIQUE SOLUTION OF THE KINETIC EQUATION FOR THE CRYSTALLIZATION PROCESS WITH SUPERFAST COOLING VELOCITIES
Irina N. Zvestovskaya (Lebedev Physical Institute, Moscow, Russia) | 13:15-
13:30 |
| <i>Lunch break</i> | | 13:30-
15:00 |
| 53 | FIELD EFFECT IN CDHGTE PHOTODIODES
A. Yartsev (Institute of Semiconductor Physics, Russian Academy of Sciences, Novosibirsk, Russia) | 15:00-
15:15 |
| 54 | DIMENSION EFFECT IN LATTICE ABSORPTION OF SILICON CARBIDE
I. A. Sokolov, S. V. Ordin (A.F. Ioffe Physico-Technical Institute, St. Petersburg, Russia) | 15:15
15:30 |

SESSION 3. *Physics in nanoelectronics analysis and synthesis & Nano-structured waveguides (continuation)*

Chair: Prof. T. Shimizu, Japan.

The session will be presented at the 2-nd Conference Hall of Presidium of FEB RAS (Svetlanskaya, 50).

ORAL PRESENTATION

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| 55 | ADVANCED MODES OF IMAGING OF FERROELECTRIC DOMAINS IN SEM
Alexander Sogr, Anna Maslovskaya, Irina Kopylova (Amur State University, Blagoveshchensk, Russia) | 15:30-
15:45 |
| 56 | ATOMIC MOTION IN THE HEAT FIELD OF DISSIPATIVE MATTER NEAR THE SURFACE OF MATERIAL
B. B. Averbukh, I. B. Averbukh (Tihooceansky state university, Khabarovsk, Russia) | 15:45-
16:00 |
| 57 | PHOTORESPONSE OF PB1-XSNXTE<IN> FILMS ILLUMINATED WITH LASER RADIATION OF $\lambda=336.8 \mu$ (F=0.9÷1012 Hz)
A. N. Akimov, Alexander E. Klimov, and Vladimir.N. Shumsky (Institute of semiconductor physics, Novosibirsk, Rusia), Vitaliy.V. Kubarev (Institute of Nuclear physics, Novosibirsk Russia) | 16:00-
16:45 |

Coffee break

16:45-
17:30

17:30 - 18:30 FINAL CEREMONY OF THE CONFERENCE
(Conference Hall of Presidium of FEB RAS)

POSTDEADLINE SUBMISSION

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| 58 | REPARTITION OF INTENSITY OF RADIATION DURING FOUR-BEAM SPLITTING
N. A. Kravtsova, I. S. Filippova, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia) | |
| 59 | ADDITIONAL BEAMS AT REFLECTION FROM THE INCLINED SIDE OF THE PRISM
M. N. Litvinova, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia) | |
| 60 | POLAR LIGHT AND ITS POLARIZING PROPERTIES
O. Y. Pikoul, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia) | |

- 61 **POLARIZATION STRUCTURE OBSERVATION OF BEAMS OF OPTICAL RADIATION**
P. V. Senin, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia)
- 62 **FEATURES OF APPEARANCE OF MANY BEAMS IN PRISMS MADE OF ANISOTROPIC OPTICAL CRYSTALS**
I. S. Filippova, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia)
- 63 **THE UNTRADITIONAL PROPERTIES OF “MALTYSKIY CROSS” IN CONOSCOPIC FIGURES OF OPTICAL CRYSTALS**
O. Y. Pikoul, V. I. Stroganov (Far East State Transport University of Khabarovsk, Russia)
- 64 **TEST METHOD FOR THE ELECTRONIC DEVICES WORKING IN EXTREMAL ENVIRONMENT**
N. N. Nomokonova, R. P. Karageliyskov, A. S. Gurin (Vladivostok State University of Economics and Service, Russia)