

Second Asia-Pacific Conference



**Fundamental problems of
opto – and microelectronics**

ADVANCE PROGRAM

Vladivostok, Russia

September 30 - October 4, 2002.

ORGANIZED BY

FAR EASTERN STATE TECHNICAL UNIVERSITY, Vladivostok, Russia.

President: Prof. G.P. Turmov.

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

Director: Academician of RAS, Prof. V.P. Miasnikov.

INSTITUTE FOR PROBLEM OF MARINE TECHNOLOGIES. Far Eastern Division of Russian Academy of Science (RAS), Vladivostok, Russia.

Director: Academician of RAS, Prof. M.D. Ageev.

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UNION PHYSICS SOCIETY OF RUSSIA, PRIMORYE BRANCH

President: Prof. Kulchin Yu. N.

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Prof. Oleg B. Vitrik,

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18. Tanaka S., National Def. Academy, Yokosuka, Japan;
19. Vigovski Yu.N. MeDia Ltd., Moscow, Russia;
20. Zavestovskaya I.N., Physics Institute of RAS, Moscow, Russia.

Program of APCOM'2002 VLADIVOSTOK

30 September 2002 (Monday)

15:00-17:30	Registration	Building "B" (Student Center)
16:00-17:30	Campus Tour Building "B"	Building "B" (Student Center)
17:30-19:30	Get Together Building "B"	Building "B" (Student Center)

1 October 2002 (Tuesday)

08:30-09:30	Conference Registration	Pushkin Theater
10:00-10:45	Conference Opening	Pushkin Theater

Session 1. *Fiber-optical communication systems and fiber-optical sensors.*

CHAIR: PROF. E.M. DIANOV , ACADEMICIAN RAS, RUSSIA.

The session will be presented at Main Building ("A") Far Eastern State Technical University, Conference Hall (A-302).

ORAL PRESENTATION

1-01	MEASUREMENT OF PLETHYSMOGRAM AND DIAGNOSIS OF STRESS BY USING PHOTOCENSOR Toshihiro Shimizu, Daiji Koike and Toyokatsu Sasaki (all authors are from Graduate School Engineering, Kokushikan University, Japan)	11:00-11:20
1-02	OPTICAL FBGS' SENSING PROPERTIES AND PRACTICAL APPLICATION IN CIVIL INFRASTRUCTURES OU Jin-ping , ZHOU Zhi, WU Zhan-Jun, TIAN Shi-Zhu, ZHAO Xue-Feng (all authors are from Harbin Institute of Technology, P. R. of China)	11:20-11:40
1-03	HIGH-SPEED ON-CHIP AND CHIP-TO-CHIP OPTICAL INTERCONNECTION Hiroyuki Tsuda (Electronics and Electrical Engineering, Keio University, Japan) and Tatsushi Nakahara (NTT Photonics Laboratories, Japan)	11:40-12:00
1-04	HIGH SPEED OPTICAL OUTER DIAMETER GAUGE FOR DIGITAL WIRE MANUFACTURE ON LINE MEASUREMENT WITH LASER AND CCD TECHNOLOGY Zhao Hong , Wang Xuan , Wang Rui (all authors are from Harbin Univ.of Sci. and Tech., P.R. China)	12:00-12:20
1-05	FIBER OPTIC SENSOR FOR MONITORING THE ABSOLUTE ANGLE OF INCLINATION OF BUILDING STRUCTURAL ELEMENTS. Yu. N. Kulchin, O.B. Vitrik, C. P. Khomentovskiy.(all authors are from Far Eastern State Technical University)	12:20-12:40
1-06	THE OPTICAL CABLES USAGE AS A PHYSICAL SENSORS Alexander V. Ovchinkin (Irkutskenergo Corp., Russia), Alexander N. Malov (Irkutsk State University, Russia)	12:40-13:00
	<i>Lunch break</i>	13:00-

1-07	THE COMBINED OPTICAL METHOD OF DETECTING OF THE STRAIN-DEFORMED CONDITION OF POTENTIALLY DANGEROUS OBJECTS. Akopjan V. A., Yesipov Yu. V. (Russia)	14:00-14:20
1-08	CALCULATION OF A RADIATION FIELD OF WAVEGUIDE MODE IN PLANAR OPTICAL WAVEGUIDE WITH PERIODIC GROOVES ON SURFACE BY METHOD OF COUPLED MODES A.S.Zadorin and R.S.Kruglov (both authors are from Tomsk State University of Control Systems and Radioelectronics, Russia), G. Poyzel (Nuremberg Polytechnical G.S. Ohm Institute, Germany)	14:20-14:40
1-09	ORGANIZATION OF FIBER-OPTICAL TEMPERATURE MEASURING SYSTEM Igor V. Denisov, Oleg V. Kirichenko, Victor A. Sedov, Roman S. Drozdov, Vsevolod V. Vorobyev, Andrey V. Artemyev (Maritime State University, Russia)	14:40-15:00
1-10	НЕКОТОРЫЕ МЕТОДЫ ПОВЫЩЕНИЯ ПОМЕХОУСТОЙЧИВОСТИ И ПРОПУСКНОЙ СПОСОБНОСТИ ВОЛС Захарий Буачидзе, Гоча Нозадзе, Арчил Чиракадзе, (АО «Электросвязь Грузии», Тбилисский Государственный Университет, Тбилисский Технический Университет)	15:00-15:20
1-11	FIBER OPTICAL DISTRIBUTED NETWORK FOR DINAMIC DEFORMATION MEASURING Yuri N. Kulchin, Oleg T. Kamenev, Yuri S. Petrov, Mihail Kantur.(all authors are from Far Eastern State Technical University)	15:20-15:40
1-12	FIBRE-OPTICAL VOLUME FLOWMETER OF A FLUID AND GAS Yu.N. Kulchin, V.P. Vasiliev, I.A. Poley (Far Eastern State Technical University)	15:40-16:00

Session 2. Optical information processing and holography.

Chair: Prof. Yu.N.Denisuk, Academician RAS, Russia.

The session will be presented at Main Building (“A”) Far Eastern State Technical University, Conference Hall (A-302).

ORAL PRESENTATION

2-01	THE APPLYING OF STROBOSCOPIC AND DOUBLE-PULSE HOLOGRAPHIC INTERFEROMETRY TO FREQUENCY-BOUNDED VIBRATIONAL INVESTIGATIONS M. Gusev, , I. Alexeenko (both authors are from Kaliningrad State University, Russia), G. Pedrini, H.J.Tiziani (Stuttgart Institute fur Technische Optik, Germany) and A. Malov (Irkutsk State University, Russia)	16:00-16:20
2-02	INVARIANT CORRELATION FILTERS DESIGN IN PROBLEMS OF IMAGE RECOGNITION N.N. Evtikhiev, P.A. Ivanov, R.S. Starikov (all authors are from Moscow Engineering Physics Institute (State University), Russia).	16:20-16:40
	<i>Coffee break</i>	16:40-17:00
2-03	SUPERRESOLUTION FOR THE HOLOGRAMS PROTECTION AGAINST OPTICAL COPYING Yu. N. Vygovskii and N. Yu. Vigovskaya (both authors are from Science-Technical Company MeDia Ltd), A. N. Malov (Irkutsk State University, Russia).	17:00-17:20

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| 2-04 | NON-CLASSICAL DICHROMATED GELATIN TECHNOLOGIES FOR HOLOGRAPHY
Alexander Malov, Yulia Zagainova (both authors are from Irkutsk State University, Russia), Nadya Reinhand (Institute of Mechanical Engineering Problems of the Russian Academy of Sciences, Russia), Yury Vigovsky (MeDia Ltd., Russia), Serge Malov, Igor Bogdan (both from Laser Physics Institute of the Siberian Branch Russian Academy of Science, Russia), Irina Semenova (A.F.Ioffe Physical Technical Institute of the Russian Academy of Sciences, Russia), Vladimir Molocilo, Alexei Petrov (both authors are from Irkutsk State Teacher University, Russia) | 17:20-
17:40 |
| 2-05 | BIFURCATION DIAGRAMS IN MODEL OF NONLINEAR RING INTERFEROMETER: PERIODICITY AND “AS A FRACTAL” AREAS
Pavel E. Denisov, Igor V. Izmailov, Boris N. Poizner (all authors are from Tomsk State Univ., Russia) | 17:40-
18:00 |

1 October 2002 (Tuesday)

Session 2 (continuation). *Optical information processing and holography.*

Chair: Prof. Yu.N.Denisuk, Academician RAS, Russia.

The session will be presented at Main Building (“A”) Far Eastern State Technical University, Conference Hall (A-302).

ORAL PRESENTATION

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| 2-06 | HOLOGRAPHIC AND MATHEMATICAL MODELING METHODS FOR BIOMECHANICAL STOMATOLOGICAL INVESTIGATION
Victor A. Vorobyev, Nataly N. Soboleva (both authors are from Maxillo-Facial Clinic, Russia), Oleg B. Vitrik, Yana I. Vitrik (both authors are from Far-Eastern State Technical University, Russia), Michel E. Guserv, Murat F. Bukayev, Igor V. Alexenko, Elena V. Kuzmina (all authors are from Kaliningrad State University, Russia), Alexander N. Malov, Serge V. Antonyuk (all authors are from Irkutsk State University, Russia), Yury N. Vigovsky (Scientific-Technical Company “MeDia Ltd”, Russia), Vasily V. Levit, Nataly V. Qutyakova, Serge N. Malov (all authors are from Irkutsk branch of the Laser Physics Institute of the Russian Academy of Sciences, Russia). | 9:00-
9:20 |
| 2-07 | MULTISPECTRAL CORRELATION MOVING TARGET DETECTION AND TRACKING
Andrew Kostrzewski, Gajendra Savant, Paul Shnitser, Michael Piliavin, Sergey Sandomirsky (all authors are from Physical Optics Corporation), Anatoly A. Vasiliev (DigiLens Inc), and David Cassasent (Carnegie Mellon University) | 9:20-
9:40 |
| 2-08 | MICRO-OBJECT MANIPULATION BY LASER BEAMS WITH NONZERO ORBITAL MOMENTUM.
Valery V. Filkin, Svetlana P. Kotova, Nikolai N. Losevskii, Malik A. Rakhmatulin, Vladimir G. Volostnikov, Vladimir V. Yakutkin (all authors are from Lebedev Physical Institute of Russian Academy of Sciences, Samara Branch, Russia) | 9:40-
10:00 |

2-09	USING A TEST SHIFT FOR DETERMINATION OF DIRECTION OF DISPLACING AN OBJECT Sergey N. Malov (all authors are from Irkutsk branch of the Laser Physics Institute of Siberian Division Branch of the Russian Academy of Sciences, Russia)	10:00- 10:20
2-10	ANALYSIS OF NONLINEAR OPTICAL CRYPTOSYSTEM STABILITY: NUMBER OF KEYS BOUNDING AND CRACKING OF DELAY TIME. Sergei M. Avdeev, Igor V. Izmailov, Boris N. Poizner, Anna A. Shulepova (all authors are from Tomsk State University, Russia)	10:20- 10:40
2-11	SELECTION OF OPTIMAL PARAMETER OF SPEED OF TRAINING OF NEURAL NETWORK PERCEPTRON TYPE Yury N. Kulchin (Far-Eastern State Technical University, Russia), Igor V. Denisov (Maritime State University, Russia), Elena V. Denisova, Maxim B. Efimov (both authors are from Far-Eastern State University, Russia)	10:40- 11:00
2-12	USING PHOTOREFFRACTIVE CRYSTALS FOR ADAPTIVE PROCESSING OF SIGNALS OF FIBER-OPTICAL MEASURING SYSTEMS. Yuri N. Kulchin, Roman V. Romashko, Oleg T. Kamenev (Far-Eastern State Technical University, Russia)	11:00- 11:20
<i>Coffee break</i>		11:20- 11:40

Session 3. Lasers physics and nonlinear optics.

Chair: Prof. Sato Heighachi, Japan.

Chair: Prof. Yu.N.Denisuk, Academician RAS, Russia.

The session will be presented at Main Building ("A") Far Eastern State Technical University, Conference Hall (A-302).

ORAL PRESENTATION

3-01	ANALYSIS AND SYNTHESIS OF GAUSSIAN BEAM OPTICAL SYSTEM BY MEANS OF GAUSSIAN BRACKETS Kazuo TANAKA (CANON Inc., Japan)	11:40- 12:00
3-02	NUMERICAL ANALYSIS OF LASING OUTPUT IN ORGANIC THIN FILM LASER WITH PHOTO-INDUCED PERIODIC GAIN STRUCTURES. Satoshi Tanaka, Hieu Chi Ta, Hyuma Itakura, Heihashi Sato, Nobuaki Takahashi (all authors are from National Defense Academy, Japan) Akira Watanabe, Seiichirou Hayakawa (both authors are from Mitsubishi Chemical Corp., Japan)	12:00- 12:20
3-03	DIRECT DISTRIBUTION OF LASING POWER INTO MULTI-OPTICAL FIBERS: THEORETICAL ESTIMATIONS Satoshi Tanaka, Heihashi Sato, Nobuaki Takahashi (all authors are from National Defense Academy, Japan)	12:20- 12:40
3-04	THE RESEARCH OF HYBRID DISPERSION COMPENSATION FIBER RAMAN AMPLIFIER Shangzhong Jin (Institute of Optoelectronics Technology and Institute of Information Engineering, P.R.China), Zaixuan Zhang, Tao Liu, Jianfeng	12:40- 13:00

Xu, , Jianfeng Wang, Honglin Liu (all authors are from Institute of Optoelectronics Technology, P.R.China), Wen Zhou (Institute of Information Engineering, P.R.China)

	<i>Lunch break</i>	13:00- 14:00
3-05	OPTICAL FIBER RAMAN AMPLIFIER AND DISTRIBUTED FIBER RAMAN SENSORS Zhang Zaixuan, Shangzhong Jin, Honglin Liu, Jianfeng Wang, Wu, Ning Guo, Tao Liu, Xiangdong Yu, Xiaobiao (all authors are from Institute of Optoelectronics Technology, P.R.China) Insoo S. KIM (Electrotechnology Research Institute, Korea)	14:00- 14:20
3-06	NONLINEAR PROPAGATION AND OPTICAL LIMITING OF ND: YAG NANOSECOND LASER PULSES BY STIMULATED BRILLOUIN SCATTERING Lü Yuelan, Lü Zhiwei, Yang Jun, Zhao Hong (all authors are from Harbin Institute of Technology, P.R.China)	14:20- 14:40
3-07	ELECTRODYNAMICS OF PROCESSES WHICH HAVE PLACE IN THE VOLUME OF A BEAM OF A MONOCHROMATIC COHERENT POLARIZED RADIATION Alexander A. Aliverdiev (Daghestan CJE, Russia), Aboutrab A. Aliverdiev, Anise A. Amirova (Institute of Physics, Daghestan Scientific Center of Russian Academy of the Science, Russia)	14:40- 15:00
3-08	RESULTS OF EXPERIMENTAL INVESTIGATION OF RECORDING HOLOGRAMS IN ABSORBENT PHOTOPOLYMERS AND MATCHING THEM WITH THE ANALYTICAL MODEL Sergey N. Sharangovich, Eugene A. Dovolnov (both authors are from Tomsk State University of Control Systems and Radio Electronics, Russia)	15:00- 15:20
3-09	ANALYTICAL MODEL OF THE RECORDING PROCESS OF TRANSPARENT HOLOGRAPHIC GRATINGS IN PHOTOPOLYMERS WITH PHOTOINDUCED ABSORPTION Sergey N. Sharangovich, Eugene A. Dovolnov (both authors are from Tomsk State University of Control Systems and Radio Electronics, Russia)	15:20- 15:40
3-10	ACENTRIC TANTALATE CRYSTALS AS PROMISING MATERIALS FOR QUANTUM AND OPTO-ELECTRONICS V.V. Atuchin, B.I. Kidyarov (both authors are from Institute of Semiconductor Physics, Russia)	15:40- 16:00
	<i>Coffee break</i>	16:00- 16:20
3-11	ELASTIC AND ELASTOOPTIC PROPERTIES OF KTIPOPO ₄ I.I. Zubrinov, V.K. Sapozhnikov, E.V. Pestrykov and V.V. Atuchin (all authors are from Institute of Semiconductor Physics, Russia)	16:20- 16:40
3-12	LASER DATA RECORDING AND READING ON THE BASE OF TERMOGALVANIC STORAGE EFFECT Alexander M. Gorovoi (Irkutsk Air Force Military Institute, Russia), Alexander N. Malov (Irkutsk State University, Russia)	16:40- 17:00
3-13	ANALYSIS OF THE DISPERSION INTERFEROMETER FUNCTION IN CONSTANT-INTENSITY APPROXIMATION R.J. Kasumova (Baku State University, Azerbaijan)	17:00- 17:20

Session 4. *Low dimensional semiconductor structures for photonics.*
Chair: Prof. V.G.Lifshitz, Co- Academician RAS Russia.

4-01	STUDY OF LIQUID CRYSTAL ABSORBED ON NANO-ROUGHENED Ag AND Au ELECTRODES BY SERS	17:20- 17:40
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Hai-Guang Zhou, Fu-Lin Wang, Ren Bin, Yang Zhi-Lin, Tian Zhon-Qun
(all authors are from Xiamen University, P.R.China)

- 4-02 FORMATION AND ELECTRIC PROPERTIES OF DISORDERED YB LAYERS ON SI(111)7X7 SURFACE 17:40-18:00
Nickolay G. Galkin (Institute for Automation and Control Processes Far Eastern Division of the Russian Academy of Sciences, Far Eastern State University, Far Eastern State Technical University, Vladivostok State University of Economic and Service, Russia), Alexander S. Gournalnik, Sergei A. Dotsenko (both authors are from Institute for Automation and Control Processes Far Eastern Division of the Russian Academy of Sciences, Russia), Dmitry L. Goroshko (Institute for Automation and Control Processes Far Eastern Division of the Russian Academy of Sciences, Vladivostok State University of Economic and Service, Russia), and Andrei N. Boulatov (Institute for Automation and Control Processes Far Eastern Division of the Russian Academy of Sciences, Far Eastern State University, Russia)

EVENING EVENTS

19:00 Concert in Pushkin Theatre for the APCOM'2002 participants.

3 October 2002 (Wednesday)

Session 4 (continuation). *Low dimensional semiconductor structures for photonics.*

Chair: Prof. V.G.Lifshitz, Co- Academician RAS Russia.

ORAL PRESENTATION

- 4-03 CHARACTERISTIC ENERGY LOSS SPECTRA OF THE METAL-SILICON SURFACE PHASES 9:00-9:20
Yu. V. Luniakov, V.G. Lifshits (both authors are from Institute of Automation and Control Processes Far Eastern Branch of the Russian Academy of Sciences, Russia)
- 4-04 CATALYTIC PLASMA CHEMICAL ETCHING OF SILICON AND SILICON DIOXIDE 9:20-9:40
Yu. I. Dikarev, I. S. Surovtsev, S. M. Tsvetkov, (all authors are from Voronezh State University, Russia)
- 4-05 ELECTRICAL CONDUCTIVITY OF SURFACE PHASES ON SILICON 9:40-10:00
Dmitry A. Tsukanov (Institute of Automation and Control Processes Far Eastern Branch of Russian Academy of Sciences), Sergey V. Ryzhkov, Oleg A. Utas (both authors are from Far Eastern Branch of Russian Academy of Sciences, Far Eastern State University, Russia), Igor A. Belous (Institute of Automation and Control Processes Far Eastern Branch of Russian Academy of Sciences, Vladivostok State University of Economics and Service, Russia), Victor G. Lifshits (Far Eastern State University, Institute of Automation and Control Processes Far Eastern Branch of Russian Academy of Sciences, Vladivostok State University

of Economics and Service, Russia)

4-06	MODERN MODELS OF A TEMPERATURE SUPERCONDUCTIVITY Yu. V. Kopayev	10:00- 10:20
	<i>Lunch break</i>	12:00- 13:00

13:00 -18:00 CULTURAL PROGRAM

EVENING EVENTS

19:00-21:00 BANQUET

4 October 2002 (Thursday)

10:00 – 11:00 FINAL CEREMONY OF THE CONFERENCE