

Vladimer Chavchanidze
Institute of Cybernetics

2014
Scientific report

Department of Mathematical Cybernetics
* Planned and performed scientific-research works
funded by the state budget of Georgia by 2014

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Monotrophic quantum computation	G. Giorgadze	G. Giorgadze G. Giorgadze, Z. Melikishvili
	Title of the work	Work Supervisor	Work Performers
2	Characterization of an m - $(1 \leq m \leq \omega)$ generating projection MMV-algebra in the variety of a perfect modal MV-algebra. Characterization of an m -generating $(1 \leq m \leq \omega)$ MMV-algebras with an m -generator and their coordination with MMV-algebras	R. Grigolia	R. Grigolia R. Gigolia
3	Title of the work	Work Supervisor	Work Performers
	With the teaching of recognition tasks, the database has been replaced by several methods of customization. Theoretical cybernetics, recognition of words.	N. Tkemaladze	V. Jikhvashvili M. Kuridze C. Mamulashvili

Stochastic Analysis and Mathematical Modeling Department

*** Planned and performed scientific-research works
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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	<p align="center">Research of theoretical and applied issues of statistical analysis, modeling and control of stochastic processes</p> <p align="center">Mathematics, Informatics</p>	<p align="center">Zurab Piranashvili</p>	<p>Revaz Tevzadze Giorgi Jandieri Tamaz Sulaberidze Irakli Skhirtladze Besik Chikvinidze Liveri Kadagishvili Natela Khutsishvili Zurab Alimbarashvili Naira Bekauri Roland Bakuradze Vladimir Mikelashvili Zaira Berkishvili Vyacheslav Meskhi Givi Karumidze Eliso Kordzaia Davit Gogolashvili Easma Gonashvili Tamar Sukhiashvili Nelly Gundishvili</p>

Department of Pattern Recognition Application System

*** Planned and performed scientific-research works
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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Research on the use of inductive output processor in hybrid systems (`Cybernetics,` “artificial intelligence”)	Goderzi Lejava Acad.doct.	Irina Kamkamidze Zaira Berikishvili Angus Vardosanidze Eduard Murgitsyan Tamar Dalakishvili Naira Bekauri
2	Title of the work	Work Supervisor	Work Performers
	Processing of selective tea leaf plucking robot’s test-demonstration Cybernetics ~, `Applied Systems of Artificial Intelligence ~)	Goderzi Lejava Acad.doct.	Irina Kamkamidze Zaira Berikishvili Angus Vardosanidze Eduard Murgitsyan Tamar Dalakishvili Naira Bekauri Rafael Tkhinvaleli Bezhan Oghlishvili Shota Nodia
3	Title of the work	Work Supervisor	Work Performers
	Develop, construct and organize the generator controlling the orders signals issued by dolphins (`Cybernetics ~,` Robotics ~)	Acad.doct. Tengiz Zorikov	Rafiel Tkhinvaleli Irakli Javakhishvili Merab Kandelaki
4	Title of the work	Work Supervisor	Work Performers
	Models of transaction through conflict resolution consensus and	Acad. Doctor	Gulaber Ananiashvili

	dealing with optimal decision-making between conflicting parties	Gulaber Ananiashvili	
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Department of Biocybernetic Systems

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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Identification of heterogeneity of biological tissues by infrared radiation. Biology, biophysics	Doctor of Biological Sciences Besarion Partsvania	B. Partsvania N. Phonjavidze, T. Gogoladze, T. Sulaberidze, I. Ivanishvili
2	Title of the work	Work Supervisor	Work Performers
	Study of the initial stages of visual information processing of human brains'	Tengiz Zorikov	T. Zorikov T. Surguladze

Department of Computing Technique Elements and Nanomaterials

*** Planned and performed scientific-research works
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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Development of new technology for creating oxidative and nitrous nanomaterials	Davit Jishiashvili	D. Jishiashvili Z. Shioalshvili N. Makhatadze A. Jishiashvili V. Gobronidze D.Sukhanov
2	Title of the work	Work Supervisor	Work Performers
	Metallic-isolator transformations in the hydride of the different rare earth elements	Ioseb Ratishvili (Institute of Physics) Natela Namoradze	Ioseb Ratishvili (Institute of Physics) Natela Namoradze
3	Title of the work	Work Supervisor	Work Performers
	Synthesis of magnetic fluids, their use in medicine	Shalva Kekutia	V.Mikelashvili J. Markhulia L.Sanebildze R. Tatarashvili Sh. Akhobadze

Department of Coherent Optics and Electronics

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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
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1	Structural and biochemically normal and degenerated biological tissue laser induced fluorescence and diffuse shear spectroscopy Direction: Laser physics, laser / optical spectroscopy, biomedical optics	G. Melikishvili (from the side of Institute of Cybernetics)	T. Medoidze, G. Jalilashvili (From the side of Institute of Cybernetics)
2	Title of the work	Work Supervisor	Work Performers
	DNA and nanophotonics direction: Molecular Biophysics, Bionanophotonics	G. Melikishvili	T. Medoidze, G. Jalilashvili (From the side of Institute of Cybernetics)
3	Title of the work	Work Supervisor	Work Performers
	Effect of boron nitri and plumbum borate supplements on B (PB) -2223 phase formation and superconducting properties	Nikoloz Margiani	Zurab Adamia, Giorgi Mumladze, Natela Papunashvili, Dali Dzanashvili
4	Title of the work	Work Supervisor	Work Performers
	Examination of nanosome nitrous impacts Y (L E) B A 2 S3 B B O O (L E E = Light Bacterial Elements N, D, E & G D) Microcontrollers for superconductors, transport and magnetic properties	Nikoloz Margiani	Zurab Adamia, Giorgi Mumladze, Natela Papunashvili, Dali Dzanashvili
5	Title of the work	Work Supervisor	Work Performers
	Photodynamic and luminescence of anisotropy in molecular aggregates	Tariel Ebralidze	Tariel Ebralidze Nadia Ebralidze
6	Title of the work	Work Supervisor	Work Performers
	Study of photophysic phenomena in photon structures. Science Sector: Informatics, Scientific Direction: Photonics	Giorgi Chanturia	R. Tatarashvili L. Kutaladze A. Tsaturov I. Mismnikov M. Turnava

Laboratory of Holographic Recording and Processing of Information

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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	<p>Developing a new, real-time polarimetric method for determining the distribution of the polarization of light obtained from astronomical objects (performed with Abastumani National Astrophysical Observatory)</p> <p>6 - Physical and Chemical Sciences / Natural Sciences: 6-210 Chemical Physics, 6-120 Optical, Quantum Electronics.</p>	Barbara Kilosanidze	<p>From the Institute of Cybernetics: Barbara Kilosanidze, Giorgi Kakauridze, Yuri Mshvenieradze, Irakli Chaganava.</p> <p>From Abastumani National Astrophysical Observatory Teimuraz Kvernadze, George Kurkhuli</p>
2	Title of the work	Work Supervisor	Work Performers
	<p>Research and use of polarized luminescence phenomenon in polarization holography tasks.</p> <p>6 - Physical and Chemical Sciences / Natural Sciences: 6-210 Chemical Physics, 6-120 Optical, Quantum Electronics.</p>	Vladimer Tarasashvili	<p>Vladimer Tarasashvili, Ana Purtseladze, Valentina Shaverdova, Svetlana Petrová</p>

Department of Optically Controlled Anisotropic Systems

*** Planned and performed scientific-research works
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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Development of a new type liquid crystal laser	AAA.Chanishvili, Z. Vardosanidze	Sh.Tavzarashvili, I.Nakhutsrishvili, K. Tevdorashvili, G.Petriashvili, M. Aronoshidze
2	Study of transport and dosimetric properties of semiconductor nano structures I (4-160), II(7-250), III (7-260)	Oleg Gogolin	R.Janelidze I.Blagidze G. Meshvelidze E.Tsiitsishvili
3	Spinel relaxation and polarized photo luminescence dynamics in self-contained quantum systems.	E.Tsiitsishvili	E.Tsiitsishvili
4	Study of linear and non-linear effects of Weigert Photonics. Optical information processing.	Zurab Vardosanidze	Andro Chanishvili, Guram Chilaia, Gia Petriashvili, Zurab Vardosanidze, Sveta Tavzarashvili, Ketevan Tevdoradze, Marina Aronshidze, Nino Fonjavidze.
5	Polarization-holographic recording through non-polarized light. Holography, processing optical information.	Zurab Vardosanidze	Andro Chanishvili, Guram Chilaia, Gia Petriashvili, Zurab Vardosanidze, Sveta Tavzarashvili, Ketevan Tevdoradze, Marina Aronshidze, Nino Fonjavidze.
6	Polarization-holographic recording in the enclosing cones.	Zurab Vardosanidze	Andro Chanishvili, Guram Chilaia, Gia Petriashvili, Zurab

			Vardosanidze, Sveta Tavzarashvili, Ketevan Tevdoradze, Marina Aronshidze, Nino Fonjavidze.
7	Research of self-recording phenomenon in dynamic holographic recording. Holography. Optical information processing.	Zurab Vardosanidze	Andro Chanishvili, Guram Chilaia, Gia Petriashvili, Zurab Vardosanidze, Sveta Tavzarashvili, Ketevan Tevdoradze, Marina Aronshidze, Nino Fonjavidze.
8	Visualization of heat distribution in nanocomposites using cholesterol liquid crystalline composites	Gia Petriashvili	Gia Petriashvili
9	Semiconductor nanostructured new generation solar elements	T.Laperashvili	T.Laperashvili O. Kvitsiani
10	Receiving and research of semiconductor outputs, high frequency photocomputers, semiconductor optical checkers	T.Laperashvili	T.Laperashvili, O. Kvitsiani M. Elizbarashvili

Laboratory of Optical-Chemical Research

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#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	The synthesis of long radical	Jimsher Maisuradze	1. Lali Devadze

	spirropinars and their optical-chemical research for their use in photonics		<ol style="list-style-type: none">2. Izolda Mzhavanadze3. Nino Sepashvili4. Tsisana Zourabichvili5. Shorena Akhobadze;6. Mzia Gugava7. Zhuzhun Urchukhishvili;8. Maia Katsiashvili
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