

Vladimer Chavchanidze
Institute of Cybernetics

2015
Scientific report

#1 Department of Mathematical Cybernetics
I.1 Planned and performed scientific-research works
funded by the state budget of Georgia by 2015

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Mathematics. Mathematical logic, Algebra. The problem of <i>MV</i> -locally finite algebras unification for MMVn and Kn ($1 \leq n < \omega$) equitable classes	Revaz Grigolia	Revaz Grigolia, Ramaz Liparteliani, Vyacheslav Meskhi, Pridon Alshibaia

I.2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Direction-Information Technologies Quantum calculator based on a	Grigor Giorgadze	G. Bolotashvili M. Elizbarashvili D. Goshadze N. Chkhikvadze

	three-dimensional quantum systems		V.Zhgamadze G.Fruidze V. Jikia P. Alshibaia
2	Mathematics. Mathematical logic, algebra. The problem of monadic MV-algebra class	Revaz Grigolia	Revaz Grigolia, Ramaz Liparteliani, Vyacheslav Meskhi, Pridon Alshibaia
3	Elaboration of the algorithm determining informative measurements for the pattern recognition system. Theoretical cybernetics, pattern recognition of the words.	N. Tkemaladze	F. Jikhvashvili M. Kuridze C. Mamulashvili

Stochastic Analysis and Mathematical Modeling Department

**I. 1. Planned and performed scientific-research works
financed by the state budget of Georgia by 2015**

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Research of theoretical and applied issues of statistical analysis, modeling and control of stochastic processes Mathematics, Informatics	Zurab Piranashvili	Revaz Tevzadze Giorgi Jandieri Tamaz Sulaberidze Irakli Skhirtladze Besik Chikvinidze Liveri Kadagishvili Natela Khutsishvili Zurab Alimbarashvili

	(Direction: theoretical and applied issues of forecasting, management, modeling, and stochastic processes)		Naira Bekauri Roland Bakuradze Vladimir Mikelashvili Zaira Berkishvili Vyacheslav Meskhi Givi Karumidze Eliso Kordzaia Davit Gogolashvili Easma Gonashvili Tamar Sukhiashvili
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#3 Department of Pattern Recognition Application System

I. 1. Planned and performed scientific-research works financed by the state budget of Georgia by 2015

#	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

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and	Work Supervisor	Work Performers
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	scientific direction		
1	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 Tkhinvaali Bezhan Oghlishvili Shota Nodia Merab Kandelaki
2	Use of clustering methods to study the behavior of live organisms Cybernetics ~, ` Applied Systems of Artificial Intelligence ~)	Acad. Doctor Otar Tavdishvili	Todua Tea Acad. Doctor
3	A New approach to conflict resolution between conflicting parties and the solution of the transaction through optimal decision-making (~ Cybernetics~)	Acad. Doctor Gulaber Ananiashvili	Gulaber Ananiashvili Irakli Javakhishvili

#4 Department of Biocybernetic Systems

I. 1. Planned and performed scientific-research works financed by the state budget of Georgia by 2015

I. 2.

#	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, T.Surguladze
2	Study of information processing mechanisms in visual system of humans	Acad. Doct. Tengiz Zorikov	Tengiz Zorikov Zurab Alimbarashvili

#5 Department of Computing Technique Elements and Nanomaterials

I. 1. Planned and performed scientific-research works financed by the state budget of Georgia by 2015

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Creating and research of new technologies for creating single-dimensional nanomaterials and research of their parameters (Physics. Nanotechnology)	Davit Jishiashvili	Z. Shioalshvili N. Makhatadze A. Jishiashvili D.Sukhanov B.Buadze

2	<p>Scientific Research Program of E. Andronikashvili Institute of Physics</p> <p>Duration of the program: 7 years (2014-2020)</p> <p>Subprogram II. Condensed environment physics direction "Condensed environment of is fundamental Experimental and Theoretical Survey of the Issues of condensed environment physics".</p> <p>Subject II. "Fundamental research on the effects of external field in dielectric and metal compounds for the creation of new materials"</p> <p>Subsection II-I-III. "Theoretical and experimental research of compounds containing hydrogen (deuterium)"</p>	<p>Program supervisor: Giorgi Kharadze</p> <p>Supervisor: Aleksandre Ghonghadze</p> <p>Supervisor: Vakhtang Kvachadze</p> <p>Supervisor: Vakhtang Kvachadze and Ioseb Ratishvili</p>	<p>Staff of the Institute of Physics and invited specialists</p> <p>Z. Akhvlediani, I. Akhvlediani, N. Arabajiani, V.Ttkhelidze;</p> <p>N. Namoradze (employee of the Institute of Cybernetics, without remuneration from the budget of the Institute of Physics)</p>
3	<p>H YBCO high temperature superconductor</p> <p>Creation and research of textured thick tapes</p>	<p>Revaz Kokhraidze</p>	<p>Revaz Kokhraidze</p> <p>Giorgi Mumladze</p> <p>Natela Papunashvili</p> <p>Jano Markhulia</p>

#6 Department of Coherent Optics and Electronics

I. 1. Planned and performed scientific-research works financed by the state budget of Georgia by 2015

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Human skin in vivo optical spectroscopy Scientific direction: Biomedical optics and spectroscopy	G. Melikishvili	Z. Melikishvili, T. Medoidze, Z. Jalilashvili
2	Production of high-speed superconducting material with enhanced features accelerated and energy-saving production using nanotechnology Solid body physics, superconductivity	Nikoloz Margiani	N. Papunashvili, Z. Adamia, V. Zhghamadze, I. Kvartskhava, C. Mumladze, d. Dzanashvili
3	Scanning optical systems (Scanning optical systems are a new class of optical devices that create a new field of optics - scanning optics. Scanning optics is one of the new scientific directions of photonics having fundamental and practical significance,)	Acad.doc Giorgi Chanturia	C. Chanturia, R. Tatarashvili, L. Kutaladze, I. Miasynikov, A. Tsaturov, M. Turnava
4	Molecular aggregations and anisotropy inducement by light in azo dye system	Acad.doc Tariel Ebralidze	Tariel Ebralidze, Nadia Ebralidze, Giorgi Mumladze

#7 Department of Optically Controlled Anisotropic Systems

**I. 1. 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	Laser of transversely dispersed stimulation or active hologram	Zurab Vardosanidze	Andro Chanishvili, Gia Petriashvili, Guram Chilaia, Marina Aronshidze, Sveta Tavzarashvili, Ketino Tevdoradze, Nino Fonjavidze

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Develop a new type of liquid crystal laser. Physics, Optics	Andro Chanishvili	G. Chilaya, M. Arronishdze, Z. Vardosanidze, I. Nakhutsrishvili, N.Ponjavidze, S.Tavzarashvili, K. Tevdorashvili
2	Study of transport and optical properties of semiconductor nano structures	Oleg Gogolin	R.Janelidze I.Blagidze G. Mshvelidze E.Tsitsishvili

3	Semiconductor nanostructured materials for new generation photovoltaic devices Physics, semiconductor nanotechnology	T.Laferashvili	O. Kvitsiani T.Laferashvili D.Laperashvili Sh. Lomitashvili A. Chanishvili
4	Creation and research of semiconductor nanostructured materials	T.Laferashvili	T.Laferashvili Sh. Lomitashvili

Laboratory of Optical-Chemical Research

I. 1. Planned and performed scientific-research works financed by the state budget of Georgia by 2015

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Synthesis of multifunctional hybrid spiropyran obtained from Indolin base and study of physical-chemical properties	Doctor of Chemistry, Head of Laboratory Jimsher Maisuradze	Lali Devadze, Shorena Akhobadze, Nino Sepashvili, Izolda Mzhavanadze, Tsisana Zurabishvili, Zhuzhuna Urchukhishvili, Ekaterine Arveladze, Mzia Gugava.
2	Creation and research of gradient polymer materials. Physical chemistry of polymers	Levan Nadareishvili	Nona Topuridze Liana Sharashidze

			Ineza Pavlenishvili
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Laboratory of Holographic Recording and Processing of Information

**I. 1. Planned and performed scientific-research works
financed by the state budget of Georgia by 2015**

I. 2.

#	The name of the work prescribed and performed by the plan indicating scientific field and scientific direction	Work Supervisor	Work Performers
1	Highly efficient polarization-sensitive materials for the polarization holography tasks. Physical and Chemical Sciences: 6-120 Optics, Quantum Electronics; 6-210 Chemical Physics.	Barbara Kilosanidze	Giorgi Kakauridze, Vladimer Tarasashvili, Valentina Shaverdova, Ana Purtseladze, Irakli Chaganava, Iyuri Mshvenieradze, Svetlana Petrová, Elene Osepaishvili

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