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THE FUNDAMENTAL DEVELOPMENTS BRANCH  
“COGNITIVE MODELING IN THE PHYSICAL SCIENCES” (“OFN”)  
OF “SRI "SFA CMT" OF "RA(N)S" N. A. VENIAMINOV V.N.”

The developed “The fundamental developments branch  
“Cognitive modeling in the physical sciences”” (“OFN”)  
treats to the fundamental developments divisions  
of “The scientific-research institute “System and financial analysis based on  
cognitive modeling technology” of “RA(N)S” named after Veniaminov V.N.”  
 (“SRI “SFA CMT” of “RA(N)S” n. a. Veniaminov V.N.” – SRI) as the first SRI  
in the structure of “SIO “Academy of cognitive natural sciences”” (“SIO “ACNS””)  
and the add. component of the system of science and education of the modern country  
for the creation, distribution and use of the main and derivative  
scientific results of the cognitive modeling technology (CMT) (www.vetrovan.(spb.)ru)  
[see the fundamental developments branches and departments of SRI]:  
1) it is executed by the principle of “administrative-economy submission”;  
2) works in the several main directions, which allow to provide  
the development of the fundamental main and derivative scientific results  
(my second report on SRW from 2006-2008(9) y. was submitted  
to “SPbSETU “LETI”” and “The Government of RF”  
for the translation, carrying out of int. action and receiving of “The Nobel prize”);  
3) includes the several various main divisions:  
I. “The fundamental developments department  
“Theory of physics, astronomy and space researches”” (“SOFA”) (\*)  
*[the fundamental developments in the area  
“Theoretical physics” (\*)* –  
theory of the questions and general problems of physical experiment,  
theory of physics of elementary particles, theory of fields,  
theory of physics of high energies, theory of nuclear physics,  
theory of physics of gases and liquids,  
theory of thermal-dynamics and statistical physics, theory of physics of firm bodies,  
theory of physics of plasma, theory of physics of atom and molecule,  
theory of optics, theory of laser physics, theory of radio-physics,  
theory of physical bases of electronics, theory of acoustics,  
theory of the cognitive modeling technology  
in the theoretical physics,  
theory of the cognitive models of the interaction between  
elementary particles and firm bodies, fields, liquids and gases,  
theory of the cognitive model of the modified  
volumetric planetary model of atom n. a. Bohr N.H.D.,  
theory of the cognitive models of the temperature areas of plasma of the atom and molecule,  
theory of the cognitive model of the optical environment of eye as the optical device,  
theory of the cognitive model of the acoustical environment of ear as the acoustical device,  
theory of the cognitive model of the distribution of waves in the environment of research;

*the fundamental developments in the area “Theoretical astronomy” (\*)* – theory of astronomy and heavenly mechanics, theory of astrometry and astro-physics of The Solar system, The Sun, stars, fogs, interstellar environment and star systems, theory of cosmology, theory of observatories, tools, devices and methods of astronomical supervision, theory of the cognitive modeling technology in the theoretical astronomy, theory of the cognitive models of the relative positioning of 1, 2, 3, 4, 5 and more galaxies, planets, stars and satellites, The Earth, The Sun and others;

*the fundamental developments in the area “Theoretical space researches of The Earth, The Sun and planets” (\*)* – theory of the general questions of space researches of The Earth, The Sun and planets, theory of the devices and methods of the fundamental scientific researches of space environment, theory of the planning and realization of starts of the space vehicles and artificial heavenly bodies, theory of uncontrol movement of the space vehicles and artificial heavenly bodies, theory of the control of movement of the space vehicles and artificial heavenly bodies, theory of space technics and technology (the rocket engines of new generation), theory of safety and the medical-biological problems of space flights, theory of use of the space systems for the connection and navigation, theory and problems of extraterrestrial territories discovery and prospects of astronautics, theory of research of the astronomical objects by the space means, theory of the geo-physical fundamental researches by the space means, theory of research of The Earth from space (the means of research of new generation), theory of the cognitive modeling technology in the theoretical space researches of The Earth, The Sun and planets, theory of the cognitive models of the gravitational and other interactions between 1, 2, 3, 4, 5 and more artificial space objects, satellites, galaxies, planets, stars, The Earth and The Sun, theory of the cognitive models of the work of the basic rocket engine, the first, the second, the third and the fourth rocket engine of the launch vehicle and others].

II. “The fundamental developments department “Theory of nuclear physics and physics of atomic nucleus” (“SYF”) (\*)  
*[the fundamental developments in the area “Theoretical nuclear physics” (\*)* – theory of the nuclear raw materials and fuel, theory of synthesis of isotopes, theory of isotopes and ionization radiations, theory of nuclear reactors, theory of thermal-nuclear reactors, theory of the action of radiations and protection against them, theory of nuclear explosions, theory of the processing of nuclear fuel and waste disposal, theory of the cognitive modeling technology in the theoretical nuclear physics, theory of the cognitive models of the structure of the chemical elements with 1, 2, 3, 4, 5 and more nucleus (the nuclear polymers), theory of the cognitive model of the modified volumetric principle n. a. Pauli W.E. for the studying of electronic clouds within limits of power levels, theory of the cognitive model of the modified planetary model of atom n. a. Bohr N.H.D. and others].

The fundamental developments branches and departments of SRI allow to develop the main and derivative scientific results of CMT.