

In Memory ...

Academician Alexei N. Sissakian

Academician Alexei Norairovich Sissakian, the Director of Joint Institute for Nuclear Research (JINR), a foreign member of the National Academy of Sciences of Armenia, a distinguished theoretical physicist and organizer of scientific research based on broad international cooperation, passed away on 1 May 2010 in his 66th year of life.

Alexei Norairovich Sissakian was born on 14 October 1944 in Moscow into a family of researchers. His father - Academician Norair Martirosovich Sissakian - was a well-known biochemist, one of the founders of space biology, and his mother - Varvara Petrovna Sissakian-Alekseeva - worked in the field of agrochemistry. There is a House-Museum of Academician Norair Sissakian in the town of Ashtarak where he was born and the main street of Ashtarak is named after him.

In 1962, he enrolled in the Physics Department of Moscow State University; he majored in theoretical physics and graduated in 1968. The same year A.N. Sissakian began working at the Laboratory of Theoretical Physics (LTP) at JINR under the supervision of Academician N.N. Bogoliubov.

Working in Dubna, A.N. Sissakian rose all the way from intern researcher to JINR director. As a scientist and manager of science, he was a prominent representative of N.N. Bogoliubov's scientific school.

The main scientific activities of A.N. Sissakian concerned elementary particle physics, approximation methods and equations of quantum field theory, the quantization problem of systems with nontrivial geometry, symmetry and topology, and the physics of strong interactions at high temperatures and densities.

In quantum field theory A.N. Sissakian with co-authors were the first to propose and develop the straight-line path approximation – an effective method of continual integration, which has found wide application in theoretical physics. A.N. Sissakian and colleagues offered a new description of processes with large



momentum transfers within the three-dimensional formalism of quantum field theory and developed a multi-component approach in the theory of multiple particle production. Based on this approach, several new effects were predicted and later confirmed in experiments at the largest particle accelerators.

In the field of mathematical physics, under the guidance of Alexei N. Sissakian, a series of seminal investigations was carried out on classical and quantum superintegrable systems in the constant curvature space, as well as on the generation of topologically nontrivial objects in models with oscillatory interaction and in supersymmetric one-dimensional quantum mechanics. In recent years, Alexei Norairovich Sissakian and co-workers dealt with further development of the method of contraction of Lie algebras applicable for theoretical physics problems.

Of wide recognition were the studies conducted by the research group of Academician A.N. Sissakian on one of the most topical problems of particle physics – the development



Academician Alexei N. Sissakian (on the left), Academician Vladimir G. Kadyshovsky (on the right), Academician Nikolay N. Bogoliubov (in the centre).

and application of nonperturbative methods in quantum field theory and the development of new approaches to very high multiplicity processes. Under the leadership of Alexei N. Sissakian, novel and promising investigations aimed at search for processes of the formation of a mixed quark-hadron phase of nuclear matter in heavy-ion collisions were carried out. He initiated and headed the largest project of JINR towards the construction of a heavy-ion collider, NICA, to study phase transitions and critical phenomena in nuclear matter.

Academician Alexei N. Sissakian always combined his active research work with pedagogical and science-organization activities. He supervised 15 theses, headed chairs at Moscow Institute of Physics and Technology and Moscow Engineering Physics Institute, was a professor at the M. Lomonosov Moscow State University, the vice-president of the International University "Dubna" and the head of its Theoretical Physics Chair, he also led the scientific seminar "Symmetries and Integrable Systems" at JINR.

Academician A.N. Sissakian was the editor-in-chief of the journal "Physics of Particles and Nuclei, Letters", a deputy editor-in-chief of the journal "Physics Particles and

Nuclei", a member of the editorial boards of several scientific publications, a member of specialized scientific councils and programme committees of international conferences and symposia, and was the organizer of major international conferences and schools on particle physics.

As Vice-Director during 1989–2005 and Director of JINR since 2006, Academician A.N. Sissakian made invaluable contributions into maintaining and enhancing the potential of JINR, determining its future scientific prospects, improving its research and production capacity, renovating the Institute as an open international nuclear physics laboratory, promoting broad cooperation with national and international research and educational centers, and towards training qualified scientific personnel.

Alexei Norairovich Sissakian was elected a corresponding member of the Russian Academy of Sciences in 2006, and in 2008 – a full member of the Academy and a member of its Presidium.

Academician Alexei N. Sissakian actively participated in the establishment of science cities as President of the Union of Russian Science Cities. He was also first deputy chairman of the Russian Pugwash Committee under the Presidium of the Russian Academy of Sciences.

Academician Alexei N. Sissakian was awarded ten Russian and foreign orders and medals, including the Orders of Honor and Friendship (Russian Federation), was a laureate of the Lenin Komsomol Prize in Science and Technology (1973) and a recipient of the Prize of the Governor of the Moscow Region (2007), was a foreign member of the National Academy of Sciences of Armenia, an honorary doctor of many foreign universities, and a member of several academies and scientific societies.

Since school age his favorite hobby had been poetry. Alexei Norairovich Sissakian published several collections of poems which enjoyed great success with his close colleagues and friends.



Being a world class internationally recognized researcher, Alexei Sissakian had been invited to give lectures and shared his experience at various research centers and universities all over the world. He was an invited speaker at many conferences.

Academician Alexei Sissakian was a great human being, a fine physicist and an incredible Teacher. He lived a remarkable life, one that inspired his students greatly. His attitude, broad range of interests and demeanor made him a wonderful person to know. He was patient, and generous with his time and affection, always ready to help and guide his students through their professional journey. He was not only Teacher and showed how to become physicist, but he was like a father who taught his students to be honest, reliable, persistent, and how to face the challenges of life at any level.

He was always encouraging the young physicists and helping them in any possible way - from the formulation of a problem to work on, to technical details in the manuscript preparation, no matter whether he is a co-author or not.

Academician Alexei Sissakian was philosophical in his approach to life. He had a great perspective, especially when it came to little things, never displaying anger or impatience. Instead, he showed a great dignity and humour.



House-Museum and Monument of Academician Norair Sissakian, Ashtarak, Armenia.

Academician Alexei Sissakian always prided of being an Armenian and talked with such excitement about our glorious past and history, about the numerous achievements of the Armenians, about the quality and the potential of our nation.



From left to right: Academician Vladimir G. Kadyshvsky, Academician Alexei N. Sissakian, Professor Alexander T. Filippov, Academician Dmitry V. Shirkov



*During DAAD Summer School on "Traffic and Econophysics", JINR, 2003.
From left to right: Academician Sergei P. Kapitsa, Prof. Vyacheslav I. Zhuravlev, Academician Alexei N. Sissakian, Professor Alexander T. Filippov*

Alexei Sissakian was always distinguished by his dedication to science, by a wonderful combination of great will power with kindness and sympathy to his relatives, friends, colleagues, to all people.

Whatever one could write about Academician Alexei N. Sissakian, it will not be enough to entirely describe his personality and contributions...

The fond memory of Alexei Norairovich Sissakian will remain forever in our hearts.

Academician Alexei N. Sissakian passed away suddenly on May 1, 2010. There are no words to describe the shock and overwhelming sadness that all of us, his friends, colleagues and students felt. It is so sad and unjust that a man of such talent, such capability, kindness and intelligence should now be so suddenly spirited away at the age of only sixty five, before he had achieved many of the things of which he was capable.

His colleagues, students and friends

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