

Sergey V. Maleyev (1931–2021)

The outstanding physicist passed away on February, 20, 2021, a few months before his 90th anniversary. Sergey Vladimirovich Maleyev was born June 3, 1931, Yerevan. The World War II caught Sergey Maleyev in Leningrad. In December his family was evacuated from a sieged city in extremely malnourished condition. His father died during the evacuation.

Sergey Maleyev graduated from high school in 1949 and entered the Faculty of Physics of Leningrad State University. Then he transferred to the Physics and Mathematics Faculty of Kharkov University and graduated from it in 1954. From 1954 to 1967 he worked at the Ioffe Physico-Technical Institute in Leningrad. In 1967, Sergey Vladimirovich organized the Department of solid-state theory, which he headed until 1997, and in which he worked until the end of his life. He earned a scientific degree of a Candidate of Sciences in Physics and Mathematics in 1958 and a Doctor of Sciences in 1974.

The contribution of Sergey Maleyev to the development of national and world science cannot be overestimated. His works are widely known, their results having long become classics that went down in university textbooks. Among them there are:

- the representation of spin operators in ordered magnetic materials through Bose operators, which proved to be very convenient to describe the interaction of spin waves (Dyson-Maleyev representation) (1957);
- fundamentals of the description of inelastic scattering of polarized neutrons in magnets (1958–1962);
- general description of the scattering of polarized neutrons in magnetically ordered substances (1963, together with Viktor Barhyahtar and R.A. Suris). The resulting equations were extremely useful for deciphering complex magnetic structures. This theory had been referred to as Blume-Maleyev equations;
- quantum theory of neutron depolarization in inhomogeneous magnetic structures, which initiated an experimental method for studying mesoscopic magnetic inhomogeneities that cannot be resolved by conventional neutron scattering (together with V.A. Ruban) (1972–1976);
- the theory of the critical dynamics of ferromagnets considering dipole forces, which for the first time showed that near the Curie point, dipole forces determine the critical dynamics. (1972–1978);
- violation of the Mermin-Wagner theorem by dipole forces and their stabilization of the long-range magnetic order in two-dimensional isotropic ferromagnets (1976);
- theoretical foundations for the study of chiral (helical) spin fluctuations in magnets by the method of polarized neutron scattering (together with A.V. Lazuta and B.P. Toperverg, 1981). Later, S.V. Maleyev proposed a method for experimental measurement of chiral critical indices in antiferromagnets with a triangular structure and in spiral magnets (1995–2001).

Having written more than two hundred scientific papers, Sergey Vladimirovich Maleyev was one among hundred most cited scientists in Russia. It is impressive to read his latest publication [1] in which he presents a brief history of the achievements triggered by his theoretical works to fully exploit the polarized neutron scattering.

Sergey Maleyev received numerous prestigious national awards for his scientific achievements. In 1986, together with G.M. Drabkin and A.I. Okorokov, he became a laureate of the USSR State Prize for his work on new methods for studying solids based on neutron scattering at steady-state nuclear reactors. In the summer of 2008, by decree of the President of Russia, he was awarded the Order of Friendship. In 2013 Sergey Maleyev received the Fock award for the series of works entitled “Interactions of low symmetry in the theory of magnetism”.

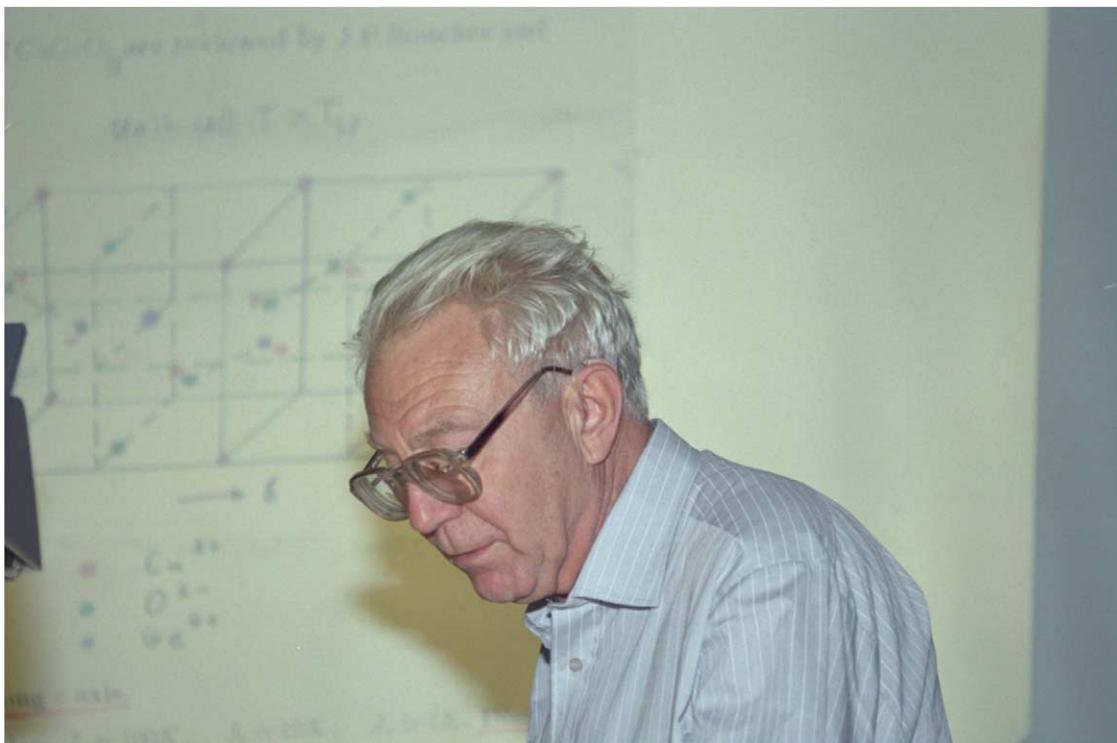


Fig. 1. Professor Maleyev, 67, presenting the lecture entitled “Nuclear-magnetic correlations in polarized neutron scattering” at PNCMI’98. This was the second international conference on polarized neutrons for condensed matter investigations, organized by the Institut Laue-Langevin in Grenoble (France). © Serge Claisse – ILL.

On September 20, 2018, Sergey Maleyev was awarded the medal of the Russian Neutron Scattering Society (ROSNEUTRO) “For outstanding contribution to the development of the theory and practice of neutron scattering”. The awards ceremony was held within the framework of the Conference on the Use of Neutron Scattering in Condensed Matter RNICs-2018 in St. Petersburg. Sergey Maleyev together with Gilyari Drabkin and Alexey Okorokov founded the School of polarized neutrons physics at the Leningrad Nuclear Physics Institute. The school had a significant impact on the development of neutron methods for studying condensed matter in Soviet Union (Russia) and worldwide.

Sergey Maleyev worked for many years as a member of the Scientific Council of PNPI, councils of the departments of the Institute: theoretical physics and neutron research. Until his death, he was the chairman of the council for condensed matter physics. S. Maleyev was a member of program committees of prestigious international scientific conferences including those on Polarised Neutrons for Condensed Matter Investigations (Fig. 1). He was the scientific supervisor of seven Ph.D. programs. Three of his students earned the Doctor of Sciences degree.

He was always very energetic, sincerely considerate, slightly ironic, infinitely forgiving to human flaws and weaknesses of his comrades and opponents, but when it came to the search for the truths of science, the questions of scholarly integrity and ethics – he was turning into an irreconcilable and principled fighter. He gained the sincere respect and admiration of his colleagues for his scientific intuition, the way he reacted to the new, the undiminished enthusiasm for new exciting findings and achievements of other people, for his breadth of knowledge. He was an open-minded person with a good sense of humor, devoid of philistinism, and his exceptional dedication to profession and a great zest for life were an example to us all. A genuine Leningrad native of the old stock, he was one of those people communicating with whom leaves an indelible mark in every soul.

Sergey Maleyev was survived by his wife and his daughter.

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References

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