
OBITUARY



August 31, 1931—April 25, 2023

Lev Rozonoer, in full Lev Il'ich Rozonoer, was an outstanding Soviet and Russian scientist. Unfortunately, he passed away in Newton (Boston, the USA) at the end of April 2003.

Rozonoer joined the Institute of Automation and Remote Control (IARC), the USSR Academy of Sciences, in 1955 after graduating from Moscow Power Engineering Institute. (Nowadays, IARC is the Trapeznikov Institute of Control Sciences, the Russian Academy of Sciences, simply called the Institute below.) He had worked at IARC for over 40 years until he left for family reasons for the USA (1996).

Rozonoer undoubtedly belongs to those outstanding scientists who have laid the foundations of control theory through their research. Rozonoer became globally recognized for his investigations on optimal control. First and foremost, he formulated and proved the correctness of a fundamentally new concept, subsequently developed by mathematicians from the Steklov Institute and called Pontryagin's maximum principle. This concept was presented by Rozonoer in his candidate's dissertation in 1966, and some members of the dissertation council even suggested conferring the doctoral degree to him. The main results of that study were published in three issues of *Automation and Remote Control*. In 1970, Rozonoer defended his doctoral dissertation. Other significant Rozonoer's results at IARC were connected with thermodynamics (optimal control of thermodynamic processes) and systems theory (information aggregation in large-scale systems and models of biological evolution). They were published in Russia as well as in leading foreign journals.

For many years, Rozonoer was a member of the Editorial Board of *Automation and Remote Control*. Dozens of his fundamental works first appeared in the journal.

Rozonoer was a brilliant teacher. Having delved into a new science, he immediately shared accumulated knowledge with his students at the Moscow Institute of Physics and Technology or Institute's employees. Such lectures attracted a large audience.

Rozonoer's uniqueness as a scientist was the breadth of his research interests rather than his separate results (no matter how significant they were). At the Institute, he was actively involved

in research on pattern recognition, mathematical logic, and the theory of algorithms and finite automata. But the real breadth of thought showed up during his life in the USA. In 2018, Fizmatlit, a famous Russian publishing house, released his book *Poslednie teksty. Teoriya sistem. Fizika. Chelovek, nauka, sotsium* (Recent Writings. Systems Theory. Physics. Man, Science and Socium). The book included only Rozonoer's results obtained after 2000. These results have turned out unexpected even for his colleagues at the Institute. For example, note his work entitled in the manner of Kant: *How the Science of the Spirit is Possible*. It attempts to lay the foundations of a scientific approach to studying the human spirit, a mysterious phenomenon that was previously considered only in philosophy and religion.

However, Rozonoer considered his main result to be the hypothesis of the random flow of time at the micro level as the cause of decoherence in quantum mechanics. Decoherence is a phase shift that spontaneously arises in quantum mechanical systems; as a result of this shift, the laws of the microworld turn into the laws of the macroworld. The random process-based conceptualization of time at the micro level seems so unusual that it has caused confusion among physicists: they will have to puzzle it out. It will be uneasy since experts in quantum mechanics are not deeply versed in the theory of random processes.

The Institute is proud that such a huge scientist grew up and worked in it for many years!

Employees of the Trapeznikov Institute of Control Sciences, the Russian Academy of Sciences