OBITUARY
ANDREI IZMAILOVICH SUBBOTIN (1945–1997)†

The eminent scientist Andrei Izmailovich Subbotin, a current member of the Russian Academy of Sciences and Lenin Prize winner, died on 14 October 1997. He was a highly moral person and a patriot, whose perception of life was based on a belief in the principle of goodwill.

Subbotin was born into the family of a serviceman in Kirov on 16 February 1945. He entered the faculty of mathematics and mechanics of Ural State University in 1962. At that time a group of young graduates of the department of mechanics of Ural State University were setting up a new department of applied mathematics, under the directorship of N. N. Krasovskii. The new research was based on their work on the theory of the stability of motion and non-linear oscillations, following in the tradition of the mechanics department.

The 1950s was the time of the birth of the theory of optimal control. This evoked great interest at the department of applied mathematics, particularly in the light of Pontryagin's maximum principle and Bellman's dynamic programming. The work at the department concentrated on the new problems of conflict control and control under conditions of uncertainty, to be formalized as differential game theory. The talented student A. I. Subbotin was noticed by E. G. Albrecht and invited to join in the research work of the department. He became a member of the group and his ability developed rapidly.

In 1969 all the researchers at the department, with Subbotin among them, were transferred to the Sverdlovsk division of the Steklov Mathematical Institute. In 1969 Subbotin defended his candidate dissertation and, soon after, his doctorate (1973), and was awarded the USSR Academy of Sciences Gold Medal for Young Scientists.

At the beginning of the 1970s Subbotin devised an extremal method for non-linear game problems of dynamics. This approach enabled the existence and general structure of solutions to be established, on the one hand, and the construction of optimal strategies which were computer realizable, on the other. The most important of these results were included in the monograph by N. N. Krasovskii and A. I. Subbotin entitled "Positional Differential Games".

Between the 1950s and 1970s numerous mathematicians investigated problems in which non-smooth solutions of first-order partial differential equations must be introduced. The new approach to finding a generalized solution of the Hamilton–Jacobi equation (the Isaacs–Bellman equation) developed by Subbotin in the mid-1970s occupies an important place in the theory of differential games He worked with Nina Nikolayevna Subbotina on a class of game problems of dynamics in which the value is a piecewise-smooth function. During the 1980s he extended his approach to a generalized solution to a wider class of first-order partial differential equations. He introduced the basic concept of a minimax solution and produced various equivalent forms of the definition. He proved the far from trivial fact that the minimax solution is equivalent to the viscosity solution introduced by Crandall, Lions and Evans.

The results that Subbotin obtained in this field were published in the monographs "Minimax Inequalities and Hamilton–Jacobi Equations" and "Generalized Solutions of First Order PDEs. The Dynamical Optimization Perspective".

Subbotin had a very broad and deep understanding of the logic of the development of science. He carried out intensive research, taught his students and supervised young research colleagues while suffering from ill health for many years. He maintained close contact with scientists from many other countries. Leading scientists participated in his seminars.

Subbotin published a formidable amount of work—over 100 papers and four monographs. His achievements have been acknowledged throughout the world. The memory of Subbotin, the kind, sensitive person and eminent scientist, will remain with all who knew him.

Translated by R.L.