

KAZIM HASANOV — 80

Kazim Gara oglu Hasanov was born in 1934 in Ashaghy Ayyublu village of Tovuz region. His father was not back from the war, and together with his junior brother he was grown up by his mother. In spite of difficult years of childhood and youth he finished the secondary school with excellent marks. In 1953 he joined the physics-mathematics faculty of Azerbaijan State University and graduated from with honours degree. By the decision of the Scientific Council he was offered to work at the University and joined the full-time post-graduate course. In 1961, under the guidance of academician Ashraf Huseynov, he defended his PhD dissertation “Investigation of a mixed problem for quasilinear hyperbolic and parabolic type differential equations”. At the same year he was appointed a head of the department of the Computing Center of ASU (now BSU) and simulateneously gave lectures in the chair of “Functional Analysis and theory of functions” in functional analysis, integral equations, differential equations. Having continued his researches in the field of partial differential equations, he was one of the active participants of the scientific seminar founded by professor Goshgar Ahmedov in 1965. Kazim Hasanov has great merits in creation and development of optimal control school in Azerbaijan. After long years, Kazim Hasanov and his followers published the results obtained in this field in the authoritative journals of the Soviet Union. Professor Kazim Hasanov researches the existence of boundary value problems for partial differential equations; different problems of quality theory of delay argument differential equations; necessary conditions, sufficient conditions for optimality, existence of optimal control, approximate construction of optimal control in optimal control theory in processes described by delay argument differential equations.



Kazim Hasanov was first who investigated the mixed problem stated for quasilinear hyperbolic and parabolic type differential equations. By this method, the existence and uniqueness of the generalized solution, almost everywhere solution and classic solutions were proved and continuous dependence of the solutions on initial conditions and on the right hand side was studied. Using the notion of wave domain, existence and uniqueness theorems for hyperbolic type equations were proved. The noted problems were studied by the Fourier and Galerkin method for discontinuous coefficient and delay argument quasi-linear hyperbolic, semi-hyperbolic, nonlinear part higher order hyperbolic equations and parabolic type equations. Existence and uniqueness of the solution of delay argument differential-extremal and integral-extremal equations was studied.

Existence and uniqueness of impulse effect second order functional-differential equations was studied, integral representation of the solution was obtained by means of fundamental solution.

The existence of optimal control for nonsmooth optimal control problems described by ordinary differential, delay argument and integro-differential equations, necessary and sufficient conditions for optimal control, higher order necessary conditions for singular control to be optimal was proved.

The control index for linear, delay argument impulse systems was given. The existence of the solution of delay argument nonlinear impulse systems was studied, the existence of generalized optimal control in optimal control problem stated for these systems was proved, necessary and sufficient conditions for generalized optimal control were obtained. Existence and uniqueness of Goursat-Darboux problem stated for second order, nonlinear impulse effect and delayed argument hyperbolic equations was studied. The existence of optimal control in optimal control processes described by such equations was proved, necessary and sufficient conditions for optimal control, higher order necessary conditions for a singular control to be optimal were derived.

First and second order necessary optimality conditions of optimal control problem described by local and nonlocal condition hyperbolic equations were obtained, by the moments problem the minimum energy problem was solved and control problems were studied. Using the maximal principle and dynamic programming methods, in optimal control problems stated for such systems, when the functional in quadratic form, the finding of optimal control is reduced to finding Riccati type partial integro-differential equation and the minimum of the functional is found by means of the Riccati equation.

In these directions, Kazim Hasanov supervised over 20 PhD and four Doctors degree dissertations. His followers work in higher institutions of Baku, Sumgayit, Ganja, and in Tashkent, Samarkant cities of Uzbekistan.

In addition to a good scientist, Kazim Hasanov is a skilled teacher. In his lectures on “Ordinary differential equations” and lectures on other subjects he explains students even abstract facts in more explicit form and proves the theorems and definitions obviously. Kazim Hasanov is the author of the text books “Ordinary differential equations”, “Optimization methods”, “Functions Theory and functional analysis”, “Linear integral equations”. We should especially note that Kazim Hasanov is very witty. He speaks a little, but likes to listen more. He is an interesting person of independent mind. As a kind supervisor, adviser, official opponent he has indispensable merits. Kazim Hasanovs labour was highly evaluated by his colleagues and society. By the decision of President of the Republic of Azerbaijan, dated from October 31, 2009 he was awarded with the title “Honored teacher”.

He did not try to get high titles and positions, but he is worthy of great respect. Kazim Hasanov is always proud of scientific novelties of his followers and is distinguished with his principal position and positive quality. Such persons are called a true votary of science.

*Professor Misir Mardanov, Professor Telman Melikov,
Associate Professor Shakir Yagubov*

List of main publications of Kazim Hasanov

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