



Avtandil Tsitskishvili

(On the Occasion of A. Tsitskishvili's 90th Anniversary)

Avtandil Tsitskishvili, Georgian mathematician, professor, doctor of sciences in physics and mathematics, turns 90 this year.

A. Tsitskishvili was born on April 30, 1925 in the village of Kashveti (Khashuri region of Georgia). In 1952 he entered the Tbilisi State University and upon graduation from the university he became a post-graduate student of the Moscow Institute of Problems of Mechanics of the USSR Academy of Sciences. In 1958, he defended his Candidate's thesis in Tbilisi and then, in 1982, Doctoral thesis in Moscow at the Institute of Problems of Mechanics of the USSR Academy of Sciences.

Since 1957 A. Tsitskishvili was scientific researcher of A. Razmadze Mathematical Institute holding the positions first of a junior and then of a senior and leading researcher. Simultaneously he delivered lectures in hydrodynamics at I. Javakhishvili Tbilisi State University. The last years he was scientific consultant in the department of mathematical theory of elasticity.

After serious illness, he passed away in 2012.

A. Tsitskishvili has developed a way of solving the problems of filtration under the Darcy law when the boundary of the domain of filtration consists of straight lines, segments of straight lines and unknown depression curves. This way is based on the method also elaborated by A. Tsitskishvili and dealing with the construction of analytic functions, mapping conformally a half-plane onto circular polygons with any finite number of vertices and arbitrary angles.

Combining the above-mentioned mathematical apparatus and the methods developed by P.Ja. Polubarinova-Kochina, A. Tsitskishvili has solved a number of specific problems of the theory of filtration with unknown boundaries, in particular, the problems of filtration through earthen dams, the problems of liquid transpiration from channels of different forms, and many other problems.

The well-known scientist Pelageya Polubarinova-Kochina in her work "On Circular Polygons in the Theory of Filtration" published in scientific transactions "Problems of Mathematics and Mechanics", which was devoted to the memory of Academician Mikhail Lavrent'ev, wrote: "For the last years A. Tsitskishvili has carried out detailed investigations allowing one to get a complete solution of the problem dealing with the construction of a solution for conformal mapping of a circular polygon with an arbitrary number of vertices onto a half-plane. Using the matrix method, Tsitskishvili successively goes around all singular points and gets the relations to find all auxiliary substitutions and, finally, a system of equations to determine values of the parameters a_k and λ_k . For a quadrangle with arbitrary angles and for a pentagon whose two sides make a cut, A. Tsitskishvili has carried out thorough investigations. For the latter problem the program for computer-aided calculations has been written and certain calculations have been performed. Thus the theory of filtration consists, properly, of two parts: (a) conformal mapping of a circular polygon and (b) definition of functions $z(\eta)$ and $w(\eta)$. The second part has been also investigated in detail by A. Tsitskishvili. Our consideration of a particular problem allows us to see how much complicated is a general problem of conformal mapping of a circular polygon onto a half-plane for which, at last, A. Tsitskishvili in his works pointed out a general way of its solution".

A. Tsitskishvili is the author of more than 100 scientific works and of one monograph under the title "General Solutions of Differential Schwartz Equations for Conformally Mapping Functions of Circular Polygons, Their Connection with Boundary Value Problems of Filtration and of Axially Symmetric Flows", which is published in the journal "Proceedings of A. Razmadze Mathematical Institute".

Avtandil Tsitskishvili will, undoubtedly, remain forever in the memory of collaborators of A. Razmadze Mathematical Institute.

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