

Professor Borislav Crstici (1924–2014)
the right man in the right place at the right time

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ABSTRACT. In Memoriam: Professor Dr. Borislav Crstici (26 March 1924 - 20 August 2014)

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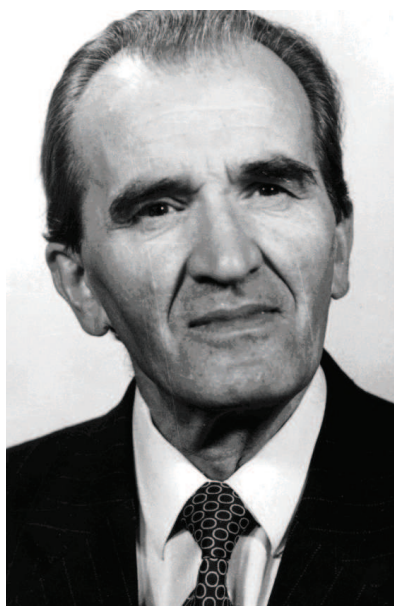
Writing about a personality as strong and complex as Professor's Borislav Crstici (Krstić in Serbian spelling) is a difficult task. An encyclopedic personality, Professor Crstici (Bora - as family and friends used to call him) was not only an inspired mathematician, but also a gifted professor, an essayist anchored in the core of the quality culture, a refined translator from Romanian to Serbian and, not lastly, a warm and caring friend one always can count on.

Born on March 26th 1924 in Belobreșca, he grew up in a family highly treasuring good quality culture. His birth place is a village situated in Caraș-Severin County, close to the frontier between Romania

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and Serbia, a multi-cultural environment including Romanians, Serbians and other nationalities. His father educated the three sons by guiding them to schools and developing their studying abilities and scientific curiosity. Young Bora's mathematical talent and his fruitful work directed him to the mathematics school of Cluj-Napoca. Borislav Crstici was a student within the Mathematics Faculty of the Babeş-Bolyai University of Cluj-Napoca between 1946-1950. Here he grew under the supervision of the non-conformist and brilliant mathematician Tiberiu Popoviciu, member of the Romanian Academy.



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According to Bora's testimony, Tiberiu Popoviciu was his mentor. A great respect and friendship united the two mathematicians throughout their lives. Tiberiu Popoviciu called Bora "sârbul meu" (i.e. "my Serbian") and Borislav Crstici kept a picture on his mentor in his house near the

pictures on his parents. Under the supervision of his great professor, Borislav Crstici elaborated an exceptional doctoral thesis entitled *On the functional equations defining polynomials*, characterized as the best thesis defended in Cluj-Napoca until that date. It contains ample personal results on the characterizations of polynomial functions starting from the famous Fréchet functional equations and from the essential characterizations of Tiberiu Popoviciu by means of J -convex functions. This thesis was the starting point of a long professional life, in which he obtained remarkable mathematical results.

The teaching activity of Borislav Crstici began in 1950, after graduating from the University, at the Serbian High School in Timișoara as a mathematics teacher. His former students gratefully remember him due to his special teaching skills. His academic career started in 1951 at the Politehnica University of Timișoara. He was assistant lecturer between 1951–1959, senior lecturer between 1959–1964, reader between 1964–1971 and finally full professor from 1971 until his retirement in 1986. His retirement did not signify the end point of the cooperation with the University, since he was consulting professor until the end of his life. The academic background full of work and responsibility was perfect for Bora's professional lifestyle. He followed in line after great Romanian mathematicians, who taught here: Traian Lalescu, the first Rector of this institution, Victor Vâlcovici, Octavian Em. Gheorghiu, Nicolae Mihăileanu.

Borislav Crstici devoted his energy to the mathematical formation within the Faculty of Electrical Engineering, teaching courses in Analytic and Differential Geometry and Special Mathematics for engineering. He published good textbooks for students, as [42] and [43] for example. He was the only Ph.D. advisor in mathematics within the Politehnica University of Timișoara, having a consistent group of disciples: Gheorghe Tudor, Nicolae Neamțu, Pavel Năslău, Ilie-Mihai Toader, Dan Dăianu (partially). Some of them became his friends and research collaborators in time. As head of the Mathematics Chair, between 1971-1972 and 1973-1979, his leading and communication skills and humanity managed to create an united mathematical team. An impressive work power was doubled by an optimistic life philosophy, described in the following reflection often

repeated in front of his colleagues: "Labor omnia vincit improbus". In fact, only the depart from our world interrupted the collaboration between Professor Crstici and his colleagues. The *Monograph of the Mathematics Department of the Timișoara "Politehnica" University*, published under his care taken in 2009 [44] proves the longevity and the depth of the relationship between the Professor, his colleagues and his university. His door was always opened to all. A wonderful man, having an overwhelming sense of humor, caring and an ideal travel companion, he used to take very long walks in parks, on hills and mountains, either alone or accompanied by friends. These walks were occasions of extended cultural festina in long literary, philosophical or mathematical conversations, following another favorite motto of the Professor: "Timeo hominem unius libri".

He published more than 90 papers in more domains of mathematical analysis, geometry [1], and category theory with approximation ([23], [25], [34]) cited by hundreds of scientists. Many of his papers are included in mathematical monographs. He published more textbooks for students (see [42], [43]) and an impressive monograph in two volumes ([40], [41]). His mathematical research begun, under the supervision of Acad. Tiberiu Popoviciu, with functional equations defining polynomials, a topic that was developed both in his thesis and in further papers [26], [30]. He approached other famous functional equations in various frameworks, giving inspired new solutions ([4], [6], [7], [15], [18], [20], [26]–[28], [36]–[39]). Many elegant and consistent results were obtained in the domain of systems of functional equations, either extending some functional equations or having special properties ([2], [3], [5]). Characterizations of classes of functions having important shape properties, as convexity for example, were obtained by investigating some functional inequations and inequalities ([10]–[14], [22], [28], [29], [32], [33], [35]). More results in approximation theory ([21], [24]) emphasize new possibilities of using the approximation thinking and techniques to particular new contexts. As a member of a technical education institution, Professor Crstici was involved in joint research projects with large industrial companies, as Întreprinderea de Construcții de Mașini Reșița (Reșița Machine-Tools Factory) (1983), solving problems related to important management aspects: value analysis of new products, determination of the reliability of some products in machine construction

industry. We cannot forget the famous and impressive monograph in two volumes *Handbook of number theory* ([40], [41]), jointly written with J. Sándor and D.S. Mitrinović, that almost conclude his mathematical literature after about 50 years of research activity.

Apart from mathematics, Borislav Crstici was a prodigious essayist and translator from Romanian to Serbian and converse. Born in a Serbian family and educated both in a Serbian and in a Romanian environment, he built links between the two cultures and ethnic communities that he loved so much all his life. One constant direction of Professor Crstici's connection with the under-graduated system of education in mathematics was in the field of providing mathematics textbooks to students in Serbian secondary and high schools from Romania. In this context, he elaborated and translated in Serbian mathematics textbooks and collections of problems and exercises. Also, he made available to the Serbian mathematical community the famous book of Acad. Solomon Marcus, *Poetica Matematica*, jointly translating it in Serbian with his former student Dragan Stojanovici (see [45]). He published weekly essays on cultural and philosophical subjects in the journal of the Serbian community from Romania. The weekly published journal *Banatske Novine* hosted, for a long time, a column written by Borislav Crstici, containing analysis of the most important internal and international events. Many times he discussed linguistic aspects of the Serbian language, with explanations on the subtle sense and refinement of many Serbian terms. Essays, literary critics, various points of view and history explanations were constantly published under Crstici's signature in the quarterly literary journal *Književni Život*. Known his remarkable inter-cultural life, one can say that he was the right man, living in the right place at the right time.

Borislav Crstici was a member of editorial board of more journals, both mathematical and cultural ones. During all his scientific life he was a member of the "Tiberiu Popoviciu" Seminar on Functional Equations, Approximation and Convexity (former Itinerant Seminar on Funct. Eq. Approx. Conv.), publishing many papers and also contributing as a member of the Editorial Board of the Annals of this seminar. He was Editor in Chief of the *Scientific Bulletin of the "Politehnica" University of Timișoara*,

Transactions on Mathematics and Physics.

Borislav Crstici, is a brilliant name in the XX-th Century Timișoara, a wise man, one of the giants on whose shoulders our generation grew up. It is difficult to us to imagine a world without Borislav Crstici. His papers and books, the manner, in which he modeled his students and Ph.D. students combining dignity and joy of being, curiosity to all the aspects of culture and life with the generosity and openness to otherness, all that will stay for ever.

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