EIGHTIETH ANNIVERSARY OF THE BIRTH
OF DUŠAN ADNAĐEVIĆ

Mila Mršević

Professor Dušan Adnađević was born on 10 October 1929 at Ruma where he attended elementary and high school. In 1952 he graduated in Mathematics from the University of Belgrade. From 1953 to 1956 he was a teacher of mathematics in the high school in his native town. Prof. Adnađević's university career began in 1956 when he was appointed teaching assistant, and later on assistant professor, at the Engineering Faculty of the University of Belgrade.

He defended his doctoral dissertation entitled *Dimensions of some partially well-ordered sets with applications* at the Faculty of Sciences and Mathematics of the University of Zagreb in 1961, under the supervision of Professor Viktor Sedmak.

On two occasions he was on specialization in Moscow: in the school year 1963/64 at the Faculty of Mechanics and Mathematics at the Moscow State University, while the year 1971/72 he spent working in the Mathematical Institute of the Academy of Sciences USSR on the invitation by the Director of the Institute.

From 1967 when he was appointed assistant professor, to the end of 1995 when he retired as full professor, he worked at the Faculty of Sciences and Mathematics of the University of Belgrade. He also lectured at the Faculty of Sciences in Kragujevac, Faculty of Philosophy in Niš and the Military Academy in Belgrade. He taught Topology, Mathematical Analysis I and II for the undergraduate students in Mathematics, and mathematical courses for the students of Chemistry and Engineering Faculty. For the postgraduate students he taught Topology, Set Theory as well as special courses in Homotopy theory, Dimension Theory, Lattices, Order and topological structures.

In 1972 the Topology seminar was founded under Professor Adnađević's leadership. Of special interest at the seminar were the following subjects: dimension

theory, ordered topologies, bitopological spaces, fuzzy sets, category theory. Almost all participants of this seminar got their Master and/or PhD degrees working on the problems which were discussed at the seminar. Under his guidance 12 PhD thesis, 14 MSc and 6 specialization works were completed.

Besides university classes, Professor Adnađević also taught Analysis with Algebra to the students in Mathematical high school and from 1962 to 1971 he was the principal of this school.

Professor Adnađević's research work is in the field of general topology. It ranges from dimension theory, relations between ordering and topological structures on sets, to bitopological spaces and fuzzy spaces. His opus contains about 40 papers.

A great part of D. Adnađević's investigations concerns dimension theory. In [1] and [2], using the notion of dimension of a partially ordered set defined by A. Dushnik and E.W. Miller in *Partially ordered sets*, (Amer. J. Math. **63** (1941), 600–610) and of nerve of a covering of a topological space, he defined a new dimension function **dm** for topological spaces in the following way: (i) $\mathrm{dm}\,X = 0$ if every finite open cover of X has a finite open refinement whose nerve is an anti-chain; (ii) $\mathrm{dm}\,X = \mathrm{d}_s N(X) - 1$, (where $\mathrm{d}_s N(X) = \sup \mathrm{d}_s N(\mathcal{X})$, $\mathrm{d}_s N(\mathcal{X})$ is the dimension of the nerve of the cover $\mathcal{X}$), if $\mathrm{dm}\,X \neq 0$ and $\mathrm{d}_s N(X)$ is a finite number; (iii) $\mathrm{dm}\,X = \infty$ if for every finite n there is a finite open cover $\mathcal{X}$ of X such that $\mathrm{d}_s N(\mathcal{X}) > n$. (As usual, $\mathrm{dm}\,\emptyset = -1$.)

Topological invariance of the function dm, monotonicity, as well as its connections with the other combinatorial dimension functions were considered. It was shown that: (i) $\mathrm{dm}\,X \geq \dim X$ for every space X, (ii) $\mathrm{dm}(X \times Y) \leq 2m+1$, where $m = \max\{\mathrm{dm}\,X, \mathrm{dm}\,Y\}$, if X and Y are compact, (iii) $\mathrm{dm}\,E_n = n$ for the Euclidean space E_n.

In general, the equality does not hold in (i). For example, for (the one-dimensional sphere) $S^1 \subset E^2$, $\dim S^1 = 1 < 2 = \mathrm{dm}\,S^1$. The dimension function dm was further studied by D. Ćirić and M. Jelić in Belgrade and L. Zambahidze and his students in Tbilisi (Georgia).

The compatibility between topological and ordering structures on the same ground set was investigated in several papers. A new notion of compatibility was introduced in [3]. Those ideas were further developed in the papers of T. Miwa.

In a number of papers written on bitopological spaces, D. Adnađević considered new classes of these spaces, investigated separation axioms, convergence and compactness, and some new types of continuity of mappings between these spaces.

Starting 1988 he became interested in the theory of fuzzy spaces. He studied some separation properties of these spaces, in [10–13] he extended the dimension functions ind and Ind to the class of fuzzy spaces and investigated their properties, in particular the relationship between zero-dimensionality and disconnectedness.

Professor Adnađević is the author of several university textbooks: *Topology* (1980), *Mathematical Analysis* I (1989) and II (1991) with Z. Kadelburg, (both have been reprinted several times), *Mathematics* I (1997) and II (1998) for the students of chemistry with A Vučić. With a group of authors he wrote textbooks

with exercises for the 5th, 6th and 8th form of the primary school. From Russian, he translated in 1984 the book *Descriptive Topology* by V.G. Boltyanskiĭ and V.A. Efremovich, and in 1966 *A problem book for Moscow olympiad* with V. Mićić.

He has been a reviewer for the international mathematical journals: *Mathematical Reviews*, *Referativnyĭ Zhurnal* and *Zentralblatt für Mathematik* and a referee for the following journals: *Fuzzy Sets and Systems*, *Matematički Vesnik*, *Glasnik Matematički*, *Filomat*, *Matematički Bilten (Skopje)*.

Professor Adnađević took active part at five national congresses of mathematicians, three international congresses (Moscow 1965, Varna 1977 and Athens 1983), eight international symposia on topology and applications (Prague 1966, Herceg-Novi 1968, Budva 1972, Beograd 1977, Dubrovnik 1985 and 1990, Mataruška Banja 1998, Aegion 2006) and some other conferences. He was invited to give lectures at the universities in Athens, Leningrad, Moscow, Taškent, Tbilisi, Zagreb and Skopje, as well as in Berkeley, Davis and St. Louis during his two months study sojourn in USA.

Along with his teaching and research activities, Professor Adnađević was active in the Yugoslav and Serbian mathematical organizations and institutions. Some of the duties he accomplished were: Secretary of the Union of the Societies of Mathematicians, Physicists and Astronomers of Yugoslavia, President of the Society of Mathematicians of Serbia, member of the Education Council of Serbia, President of the Mathematics Committee of the Education Council of Serbia, President of the Council of the Belgrade University, Dean of the Faculty of Mathematics.

From 1979 to 1993 he was Editor-in Chief of Matematički Vesnik.

Our congratulations to Professor Dušan Adnađević on occasion of his eightieth birthday and best wishes for good health and further fruitful work.

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Faculty of Mathematics, University of Belgrade, Studentski trg 16, 11000 Beograd, Serbia

E-mail: `mrsevic@matf.bg.ac.rs`