Otokar Grošek; Ladislav Satko
Professor Robert Šulka is 70

Terms of use:

PROFESSOR ROBERT ŠULKA IS 70

These days Prof. Šulka turned seventy. He has been for many years one of the pillars of Slovak mathematics. Most of his professional life he was a teacher at the Department of Mathematics, Faculty of Electrical Engineering of the Slovak Technical University (STU) (now Faculty of Electrical Engineering and Information Technology of the Slovak University of Technology) in Bratislava.

He was born on 30th of October, 1927 in Strakonice, which is now a part of Czech Republic. In 1938, his family moved to Levice, Slovakia, where he stayed until he entered a high school. As he likes to interpret it, without moving from Levice he lived in many countries, Czechoslovakia, Hungary, former Slovak state, Czechoslovakia.

At the beginning his major at the Slovak Technical University was mechanical engineering. After his first term, his deep interest in mathematics caused that he transferred to the Faculty of Natural Sciences of Comenius University in Bratislava. His major there was Mathematics and Descriptive Geometry for future high school teachers. He was "caught" to research mathematics thanks to lectures given by Š. Schwarz and O. Borůvka. In 1951, he was awarded a research assistantship with the Department of Descritpive Geometry STU, where Prof. Čenek was the Head. After graduation he became an Assistant Professor there. During the period 1953–1963, he was lecturing mainly the descriptive geometry. From 1963 till his retirement, he gave lectures in calculus at the Faculty of Electrical Engineering.

Although he gave lectures in descriptive geometry and later on in calculus, his scientific interest was focused on algebra. His first paper was published in 1955 [1]. The paper was inspired by results of Prof. Borůvka. Also the papers [2], [3], [4] were devoted to the same topic. He introduced there the notion of a topological groupoid and topological factoroid and studied their properties. Later, Prof. Šulka became a member of the well-known semigroup seminar led by Prof. Schwarz. The papers [5]–[11], [15], [18]–[21] dealt with the various problems from the area studied at this seminar. He defined different types of nilpotency on semigroups as well as four types of radicals with respect to specific subsets of semigroups. In this area, he has extended results of J. Bosák. By means of these generalized notions, it is possible to study various semilattices and lattices on the set of all subsets of a semigroup as well as topology on the given semigroup. His work on nilpotency and on radicals in semigroups started an intensive research in the area. The papers [6]–[9], [11], [12] were cited in the monography [SZÁS, F.: *Radikale der Ringe*, Akadémia Kiádo, Budapest, 1975]. The main results of the papers say that a family of some specific subsets of a given semigroup defined by radicals forms up either a lattice or a semilattice. In two special cases, construction lead to a topology on a semigroup.

The papers [12], [13] are devoted to the greatest semilattice decomposition of a semigroup. The first of them is cited in the monograph [PETRICH, M.: *Introduction to Smigroups*, Charles E. Merril Pub. Co, Columbus, Ohio, 1973]. The main contribution of the paper claims that any semilattice decomposition can be obtained by means of semilattice decompositions of the semigroup consisting of two classes. In 1981, Prof. Šulka became a leader of the semigroup seminar as well as the principal investigator of a grant supported by the State grant agency. His research was concentrated on three new kinds of nilpotency in a semigroup. He managed to find three lattices made up by elements of all subsets of a semigroup. Also this enabled him

to characterize some classes of semigroups. The results formed the core of his "DrSc thesis". He defended the thesis on 14th of October, 1987.

Prof. Šulka presented results of his research on international conferences held in Slovakia, Austria, Hungary, Germany and Poland. He was also invited to lecture in Hungary and Germany. These stays led to a joint work [17] with Hungarian mathematicians on A-ideals. Together with [16], this paper extends the results of O. Grošek and L. Satko in the area.

The results of I. Fabrici on the principal ideals in the direct product of semigroups were generalized by Prof. Šulka to the principal α-ideals and generalized principal α-ideals in semigroups ([22], [23], [24]).

Prof. Šulka was also a creative instructor. He published several lecture notes on descriptive geometry as well as a professional paper on the topic. In the lecture notes he tried to fill in a gap which was created in teaching of descriptive geometry after omitting projective geometry from the syllabus. He managed to do it by a simple mathematical justification of affine and colinear mapping of the circle. This idea influenced several instructors of descriptive geometry from the Building construction and Machinery faculty. Thanks to this, the lecture notes written by Prof. Šulka were published in several editions.

During the academic year 1969–70 Prof. Šulka lectured at the Baghdad University, Iraq.

As an instructor of Calculus at the Faculty of Electrical engineering he got convinced that the important tool for building a modern course in Calculus is linear algebra. Gradually, he modified the whole Calculus course in this spirit. As the result of the effort, he was one of the authors of two lecture notes and two textbooks used in the whole country. In 1989, Prof. Šulka was appointed Professor in mathematical analysis. The last two years of his work with the Department of Mathematics, Prof. Šulka delivered lectures in functional analysis for graduate studies. He focused on solving real life problems in engineering.

During his work with the Slovak Technical University, Prof. Šulka published 24 scientific papers, 3 textbooks and 8 lecture notes. He brought up several generations of electrical engineers. He was considered by them as an excellent instructor who was always ready to help his students.

Prof. Šulka has already retired. Despite of this he is still lecturing at the Faculty of Education of Comenius University in Bratislava.

We wish him good health and happiness in his life.

Otokar Grošek
Ladislav Satko

LIST OF PUBLICATIONS BY ROBERT ŠULKA

Scientific papers

[1] *Topologické grupoidy*, Mat.-Fyz. Časopis **V** (1955), 10–21 (Slovak).

[2] *Poznámka o izomorfizme topologických faktoroidov*, Mat.-Fyz. Časopis **VI** (1956), 137–142 (Slovak).

[3] *O izomorfizme topologických grupoidov*, Mat.-Fyz. Časopis **VII** (1957), 143–157 (Slovak).

[4] *O maximálnom spoločnom zjemnení a minimálnom spoločnom zákryte dvoch topologických faktoroidov*, Mat.-Fyz. Časopis **VIII** (1958), 20–26 (Slovak).

[5] *Poznámka o faktorových pologrupách danej pologrupy*, Mat.-Fyz. Časopis **13** (1963), 205–208 (Slovak).

[6] *O nilpotentnykh elementakh, idealakh i radikalakh polugruppy*, Mat.-Fyz. Časopis **13** (1963), 209–222 (Russian).

[7] *Zametka o radikalakh v faktorpolugruppakh*, Mat.-Fyz. Časopis **14** (1964), 297–300 (Russian).

[8] *Radikaly i topologija v polugruppakh*, Mat.-Fyz. Časopis **15** (1965), 3–14 (Russian).

[9] *On the nilpotency in semigroups*, Mat.-Fyz. Časopis **18** (1968), 148–157.

[10] *Note on the nilpotency in compact H-semigroups*, Mat. Časopis **18** (1968), 105–111.

[11] *Note on the cevrin radical in semigroups*, Math. Časopis **18** (1968), 57–58.

[12] *The maximal semilattice decomposition of a semigroup, radicals and nilpotency*, Math. Časopis **20** (1970), 172–180.

[13] *The maximal semilattice decomposition of semigroups*, Math. Časopis **21** (1971), 269 276.

[14] *Remark on partially ordered sets, universal algebras and semigroups*, Math. Slovaca **29** (1979), 131–139.

[15] *Two lattices belonging to a semigroup*, Acta Math. Univ. Comenian. Summer Session on General Algebra (1973), 79–82.

[16] *The minimal right A-ideal of the free semigroup on a countable set*, Math. Slovaca **32** (1982), 301–304.

[17] (with Andréka, H. and Németi, I.) *Remark on one-sided A-ideals of semigroups*, Math. Slovaca **33** (1983), 231–235.

[18] *On three lattices that belong to every semigroup*, Math. Slovaca **34** (1984), 217–228.

[19] *Nilpotency in semigroups and sublattices of their Booleans*, Math. Slovaca **37** (1987), 147–158.

[20] *Nilpotency in universal algebras*. In: Proceedings of the V. Univ. Alg. Symposium, Turawa, Poland, 3–7 May, 1988, 308–320.

[21] (with Kollár, D.) *On some closure operators on semigroups*, Demonstratio Math. **XXIV** (1991), 35–45.

[22] *On principal generalized α-ideals and maximal principal generalized α-ideals in the direct product of semigroups*, Pure Math. Appl. Ser. A **3** (1992), 55–60.

[23] *On principal α-ideals and maximal principal α-ideals in the direct product of semigroups*, Pure Math. Appl. Ser. A **3** (1992), 127–134.

[24] (with Lajos, S.) *Green's relations for principal generalized α-ideals and principal α-ideals in semigroups*, Pure Math. Appl. Ser. A **4** (1993), 333–338.

Books

[K1] (with Eliáš, J., Horváth, J. and Kajan, J.) *Zbierka úloh z vyššej matematiky 4*, ALFA, Bratislava, 1970 (Slovak).

[K2] (with Moravský, L. and Satko, L.) *Matematická analýza (1)*, ALFA, Bratislava 1986 (Slovak).

[K3] (with Moravský, L. and Moravčík, J.) *Matematická analýza (2)*, ALFA, Bratislava 1992 (Slovak).

Lecture–Notes

1. (with Fehér, J., Frecerová, J., Macková, B., Oravec, G., Vykouk, B. and Zámožík, J.) *Deskriptívna geometria v príkladoch*, SVTL, Bratislava 1959 (Slovak).

2. (Kolektív katedry deskriptívnej geometrie) *Prehľad deskriptívnej geometrie I*, SVTL, Bratislava 1958 (Slovak).

3. (Kolektív katedry deskriptívnej geometrie) *Prehľad deskriptívnej geometrie VI*, SVTL, Bratislava, 1959 (Slovak).

4. (Kolektív katedry deskriptívnej geometrie) *Prehľad deskriptívnej geometrie IX*, SVTL, Bratislava, 1961 (Slovak).

5. (with Oravec, G. and Rybár, J.) *Deskriptivna geometria I*, ES SVŠT, Bratislava, 1978 (Slovak).

6. (Kolektív katedry matematiky) *Návod na opakovanie stredoškolskej matematiky* (3. vydanie), ES SVŠT, Bratislava, 1979 (Slovak).

7. (with Satko, L.) *Matematická analýza I*, ES SVŠT, Bratislava, 1980 (Slovak).

8. (with Satko, L.) *Matematická analýza II*, ALFA, Bratislava, 1985 (Slovak).