

Anna Valková

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80TH BIRTHDAY OF PROFESSOR ANTON HUŤA

Prof. RNDr. Anton Huťa, DrSc., the founder and a living legend of numerical mathematics, applied mathematics and mathematical statistics in Slovakia, was born 80 years ago, on July 3, 1915.

He studied insurance mathematics at the Czech Technical University in Prague and mathematics and physics at Charles University. After the abolition of Czech universities in 1939, he finished his studies at Comenius University in Bratislava. In 1943 he took the academic title of RNDr., in 1961 the scientific degree of CSc. (= PhD.), and in 1991 he obtained the degree of DrSc., the highest scientific degree in Czecho-Slovakia. For more than half a century, he was a teacher at the Faculty of Science, and later the Faculty of Mathematics and Physics, of Comenius University. For several years he simultaneously worked at the Slovak Technical University in Bratislava, where he led the Institute of Applied Mathematics. He was an assistant and for years a collaborator of the nestor of Slovak mathematicians academician Jur Hronec.

Scientific activities of Prof. Huťa have been mainly concentrated to Runge-Kutta (RK) methods of higher orders. He was a pioneer in this area and he achieved an international reputation. His papers [10] and [11] evoked an extraordinary reaction, at least 50 citations in foreign books and journals. For instance, J. C. Butcher devoted a special paper to his scientific results: *On the integration processes of A. Huťa*, J. Austral. Math. Soc. **3** (1963), 202–206.

For determining the parameters of RK formulas of the 6th order, it was necessary to solve a system of 31 non-linear equations with 36 unknown variables. It was shown that the free parameters can be chosen in such a way that the weights in the formula of the corresponding RK method would be the Newton-Cotes numbers. A significant advance was achieved by discovering the possibility of multiple transformation of the conditioning equations and subsequent decreasing of their grades and partial linearization of corresponding equations.

Prof. Huťa introduced such a convenient notation that the indices determine the genesis of a given element. On the base of the notation, there was discovered an algorithm for deriving generalized explicit RK formulae, published jointly with Prof. Karl Strehmel. Together with Doc. RNDr. V. Penjak, CSc., Prof. Huťa derived formulae of the 7th order (solving 59 non-linear equations with 66 unknown variables), and at the age of 78 years, he published with his son RNDr. A. Huťa, CSc. formulae of the 8th order (will be appeared). More than 15 other mathematicians were supervised by Prof. Huťa, e.g., V. Ficker, M. Vencková, V. Jukl, A. Valková, E. Füllekyová, Z. Schneider, J. Štekauer, J. Dančo. In mathematical statistics, doc. RNDr. F. Lamoš, CSc. achieved his scientific degree under supervision of Prof. Huťa.

Very successful was also a cooperation of Prof. Huťa with specialists in medicine, e.g., he created, in cooperation with academician L. Dérer a mathematical model of biorythms, and he also cooperated with Prof. M. Mikuleký. For many decades, he was a scientific expert for numerous scientific institutions (among them also institutes of the Slovak Academy of Sciences). He took part in many scientific conferences, worked as a chairman or a member of many scientific committees, editorial boards etc.

Prof. Huťa devoted his whole soul to the world of numbers and mathematical formulae, to boring and not very attractive (for some people) but very useful world of numerical mathe-

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atics. His love to the magic language of numbers brought good fruits. He also inculcated this love to a big number of his students.

On the occasion of Prof. Huťa's jubilee, we wish him, on behalf of his former fellow workers and students, much pleasure, good health and much energy for the future.

Anna Valková

LIST OF PUBLICATIONS BY PROFESSOR ANTON HUŤA

- [1] *Generalization of corrections of statistical moments* (Slovak). In: Sborník prác Prír. fak., Bratislava, 1946, pp. 3–32.
- [2] *On the dichotomic distribution* (Slovak) In: *Príroda*, Turčiansky Sv. Martin, 1948, pp. 75–79.
- [3] *Gauss curve as an instrument of natural sciences* (Slovak). In: *Príroda*, Turčiansky Sv. Martin, 1948, pp. 115–120.
- [4] *University Professor Jur Hronec, National Prize Winner* (Slovak). In: *Príroda*, Turčiansky Sv. Martin, 1948–49, pp. 49–50.
- [5] *On the function T_k* (Slovak). In: *Technický sborník*, Bratislava, 1950, pp. 44–55.
- [6] *Foundations of Probability* (Slovak), SPN UK, Bratislava, 1953.
- [7] *Mathematical Statistics in Research* (Slovak), SUTEIN, Bratislava, 1956.
- [8] *Academician Jur Hronec has lived 75 years* (with M. Harant), *Acta Fac. Rerum Natur. Univ. Comenian.* **1** (1956), 145–148.
- [9] *Numerical solution of differential equations and systems of differential equations of the first order* (Slovak). In: *Differential Equations I* (J. Hronec, ed.), SAV, Bratislava, 1956, pp. 350–366.
- [10] *Une amélioration de la méthode Runge-Kutta-Nyström pour la résolution numérique des équations différentielles du premier ordre*, *Acta Fac. Rerum Natur. Univ. Comenian.* **1** (1956), 201–224.
- [11] *Contribution à la formule de sixième ordre dans la méthode de Runge-Kutta-Nyström*, *Acta Fac. Rerum Natur. Univ. Comenian.* **2** (1957), 21–24.
- [12] *Über das formale Ausdrücken des partikulären Integrals einer Differentialgleichung durch die Koeffizienten der gegebenen Gleichung*, *Acta Fac. Rerum Natur. Univ. Comenian.* **4**, (1959), 133–146.
- [13] *Formal expression of a particular integral of the differential equation by the help of the coefficients of a given equation* (Slovak). In: *Differential Equations I* (2nd edition) (J. Hronec, ed.), SAV, Bratislava, 1960, pp. 431–443.
- [14] *Academician Jur Hronec (17.V.1881 – 1.XII.1959)* (Slovak), *Mat.-Fyz. Rozhledy* **39** (1960–61), 43–44.
- [15] *Eine Bemerkung zur Zerlegung der natürlichen Zahlen*, *Acta Fac. Rerum Natur. Univ. Comenian.* **9** (1964), 57–62.
- [16] *Die Beurteilung des therapeutischen Effektes der Antibiotika bei Tularämie* (cooperation with Kleibl, Bilíková, Čech, Klinda), *Wiener medizinische Wochenschrift* **114** (1964), 308–311.
- [17] *Development of mathematics and mathematical departments on the Faculty of Sciences, Comenius University in Bratislava* (Slovak). In: *Sborník 25 rokov PFUK v Bratislave 1940–1965*, SPN, Bratislava, 1966.

- [18] *Die Möglichkeiten neuer Zutritte in der klinischen Zytostatikabwertung* (with Černý, Winkler, Sándor, Halko, Ujházy, Uhrínová, Pentrek, Koza). In: IV. Conferentia Hungarica pro Therapia et Investigatione in Pharmacologia, Societas Pharmacologica Hungarica, Budapest, 1968, pp. 331–335.
- [19] *Contribution to the numerical solution of differential equations by means of Runge-Kutta formulas with Newton-Cotes weights*, Acta Fac. Rerum Natur. Univ. Comenian., Math. **28** (1972), 51–65.
- [20] *Eine Verallgemeinerung des Runge-Kutta Verfahrens zur numerische Lösung der Gleichung $y' = f(x, y)$* . (GAMM-Tagung, München 1973), Z. Angew. Math. Mech. **54** (1973), 221.
- [21] *Numerical methods and their applications in mathematical statistics in Bratislava departments* (Slovak). (Probastat'1974), Acta Metronomica **10** (1974), 4–9.
- [22] *On some topical problems of the numerical solution of differential equations* (Slovak). In: 3. sympóziu Algorithmy vo VT, ZsKR-SVTS, Bratislava, 1975, pp. 69–79.
- [23] *On the exponential interpolation* (Slovak). In: 4. sympóziu Algorithmy vo VT, ZsKR-SVTS, Bratislava, 1977, pp. 85–96.
- [24] *An algorithm for the computation of the n -th order formula for the numerical solution of initial value problems for ordinary differential equations*. In: Proc. Fourth Symp. on Basic Problems of Numerical Mathematics (Liblice), Plzeň, 1978, pp. 87–101.
- [25] *The algorithm for computation of the n -order formula for numerical solution of initial value problem of differential equations*. In: ALGORITHMS'79, Proc. of lectures of 5th symp. on algorithms, ZsKR-ČSVTS, Bratislava, 1979, pp. 53–61.
- [26] *On exponential interpolation*, Acta Fac. Rerum Natur. Univ. Comenian., Math. **35** (1979), 157–183.
- [27] *On exponential approximation* (Slovak). In: ALGORITHMS'81, Proc. of lectures of the 6th symp. on algorithms, JSMF-SAV-OSVS, Bratislava, 1981, pp. 99–107.
- [28] *Eine Bemerkung zu den Runge-Kutta Verfahren, Numerische Behandlung von Differentialgleichungen*. In: MLU Halle-Wittenberg, Wissenschaftliche Beiträge 1981/47 (M 23), Halle (Saale), 1981, pp. 59–62.
- [29] *Algorithm for construction of explicit n -order Runge-Kutta formulas for the systems of differential equations of the 1st order*. In: Proc. Conf. Equadiff 5 (Bratislava 1981). Teubner-Texte Math. 47, Teubner, Leipzig, 1982, pp. 140–144.
- [30] *Small Encyclopedia of Mathematics* (2nd, 3rd editions), (Slovak; co-author), Obzor, Bratislava, 1978, 1981.
- [31] *Rational approximation of semigroup* (with I. Marek). In: Zborník prednášok Konferencie z numerických metód a teórie grafov, JSMF, Košice, 1982, pp. 16–26.
- [32] *Construction of explicit and generalized Runge-Kutta formulas of arbitrary order with rational parameters* (with K. Strehmel), Apl. Mat. **27** (1982), 259–276.
- [33] *Criteria for adapted interpolation* (Slovak). In: ALGORITHMS'83, Proc. of lectures of 7th symp. on algorithms, JSMF-SAV-OSVS, Bratislava, 1983, pp. 106–110.
- [34] *On exponential interpolation*, Bull. Appl. Math. **29** (1983), 37–64.
- [35] *A contribution to the Runge-Kutta formulas of the 7th order with rational coefficients for the system of differential equations of the 1st order* (with V. Penjak), Apl. Mat. **29** (1984), 411–422.
- [36] *On the exponential approximation*, Bull. Appl. Math. **34** (1984), 23–40.
- [37] *Probability and statistics for numerical mathematicians* (with F. Lamoš), UK, Bratislava, 1984.
- [38] *On exponential approximation*, Apl. Mat. **30** (1985), 321–331.

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- [39] *Operatoroid calculus and some of its applications* (Slovak). In: ALGORITHMS'85, Proc. of lectures of 8th symp. on algorithms, JSMF-SAV-OSVS, Bratislava, 1985, pp. 89–93.
- [40] *Ein Beitrag zu den Runge-Kutta Methoden höherer Ordnung mit rationalen Parametern für numerische Lösung gewöhnlicher Differentialgleichungen 1. Ordnung*. In: Vortragsauszüge des XI. österreichischen Mathematikerkongress, ÖMG, Graz, 1985.
- [41] *A contribution to the Runge-Kutta formulas of the 7th order with rational coefficients for the system of differential equations of the 1st order* (with V. Penjak), Bull. Appl. Math. **40** (1985), 49–62.
- [42] *Operatoroidsrechnung*, Bull. Appl. Math. **44** (1986), 81–87.
- [43] *The construction of explicit one-step hybrid methods* (with J. Dančo), Acta Math. Univ. Comenian. **52-53** (1987), 265–273.
- [44] *On the multidimensional interpolation* (Slovak). In: ALGORITHMS'87, Proc. of lectures of 9th symp. on algorithms JSMF-SAV-OSVS, Bratislava, 1987, pp. 81–85.
- [45] *Über die Transformation der Systeme der Bedingungsgleichungen der Runge-Kutta Verfahren*. In: ALGORITHMS'89, Proc. of lectures of 10th symp. on algorithms, JSMF-SAV-OSVS, Bratislava, 1989, pp. 144–150.
- [46] *Über die Eigenschaften der Bedingungsgleichungssysteme der Runge-Kutta Formeln höherer Ordnung*. In: Vortragsauszüge des XII. österreichischen Mathematikerkongress, ÖMG, Wien, 1989.
- [47] *The construction of the Runge-Kutta formulas of the eighth order* (with A. Huťa, Jr.). (To appear.).