Annales Univ. Sci. Budapest., Sect. Comp. 35 (2011) 13–24

LIST OF PUBLICATIONS

Antal Járai

Refered papers

[1] On measurable solutions of functional equations, *Publ. Math. Debrecen,* **26** (1979), 17–35.

[2] On the measurable solutions of a functional equation arising in information theory, *Acta Math. Hungar.,* **34** (1979), 105–116. (with Z. Daróczy)

[3] Regularity properties of functional equations, *Aequationes Math.,* **25** (1982), 52–66.

[4] Invariant extension of Haar measure, *Diss. Math.,* **233** (1984), 1–26.

[5] A remark to a paper of J. Aczél and J. K. Chung. *Studia Sci. Math. Hungar.,* **19** (1984), 273–274.

[6] Derivates are Borel functions, *Aequationes Math.,* **29** (1985), 24–27.

[7] Interval filling sequences, *Annales Univ. Sci. Budapest., Sect. Comp.,* **6** (1985), 53–63. (with Z. Daróczy and I. Kátai)

[8] On regular solutions of functional equations, *Aequationes Math.,* **30** (1986), 21–54.

[9] On functions defined by digits of real numbers, *Acta Math. Hungar.,* **47(1–2)** (1986), 73–80. (with Z. Daróczy and I. Kátai)

[10] Intervallfüllende Folgen und volladditive Functionen, *Acta Sci. Math.,* **50** (1986), 337–350. (with Z. Daróczy and I. Kátai)

[11] On the distance of finite numbers of a given length, *Periodica Math. Hungar.,* **18** (1987), 193–201. (with Z. Daróczy and I. Kátai)

[12] Differentiation of parametric integrals and regularity of functional equations, *Grazer Math. Ber.,* **315** (1991), 45–50.

[13] Some remarks on interval filling sequences and additive functions, *Grazer Math. Ber.,* **315** (1991), 13–24. (with Z. Daróczy and I. Kátai)

[14] Hölder continuous solutions of functional equations, *Compes Rendus Math. Rep. Acad. Sci. Canada,* **14** (1992), 213–218.

[15] On sequences of solid type, In: *Probability theory and application,* Kluwer Academic Publ., 1992, 335–342. (with Z. Daróczy and T. Szabó)

[16] On Hölder continuous solutions of functional equations, *Publ. Math. Debrecen,* **43/3–4** (1993), 359–365.

[17] On continuous solutions of functional equations, *Publ. Math. Debrecen,* **44/1–2** (1994), 115–122.

[18] On analytic solutions of functional equations, *Annales Univ. Sci. Budapest., Sect. Comp.,*

[19] On Lipschitz property of solutions of functional equations, *Aequationes Math.,* **47** (1994) 69–78.

[20] (a) The measurable solutions of a functional equation of C. Alsina and J. L. Garcia-Roig, *Compes Rendus Math. Rep. Acad. Sci. Canada,* **17** (1995), 7–10. (b) Remark 2. (Solution of a problem of C. Alsina and J. L. Garcia-Roig), *Aequations Math.,* **47** (1994), 302. (with Gy. Maksa)

[21] A Steinhaus type theorem, *Publ. Math. Debrecen,* **47** (1995), 1–13.

[22] On some properties of attractors generated by iterated function systems, *Acta Sci. Math.* (*Szeged*), **60** (1995), 411–427. (with K.-H. Indlekofer and I. Kátai)

[23] Regularization and general methods in the theory of functional equations, *Aequationes Math.,* **52** (1996) 10–29. (with L. Székelyhidi)

[24] Largest known twin primes, *Math. Comp.,* **65** (1996), 427–428. (with K.-H. Indlekofer)

[25] Comparison of the methods of rock-microscopic grain-size determination and quantitative analysis, *Math. Geology,* **29(8)** (1997), 977–991. (with M. Kozák and P. Rózsa)

[26] A regularity theorem in information theory, *Publ. Math. Debrecen,* **50(3–4)** (1997), 339–357. (with W. Sander)

[27] Regularity property of the functional equation of the Dirichlet Distribution, *Aequationes Math.,* **56** (1998), 37–46.

[28] A generalization of a theorem of Piccard, *Publ. Math. Debrecen*, **52(3-4)** (1998), 497–506.

[29] Largest known twin primes and Sophie Germain primes, *Math. Comp.,* **68** 1999, 1317–1324. (with K.-H. Indlekofer)

[30] Solutions of an equation arising from utility that is both separable and additive, *Proc. Amer. Math. Soc.,* **127** (1999), 2911-2915. (with J. Aczél and R. Ger)

[31] Measurable solutions of functional equations satisfied almost everywhere, *Math. Pannonica,* **10/1** (1999), 103–110.

[32] A functional equation involving three means, *Rocznik Naukowo-dydaktyczny Akademii Pedagogicznej w Krakowie 204 Prace Matematyczne,* XVII (2000), 117–123. (with C.T. Ng and W. Zhang)

[33] Baire property implies continuity for solutions of functional equations — even with few variables, *Acta Sci. Math.* (*Szeged*), **66**, (2000), 579–601.

[34] Solutions of functional equations having bounded variation, *Aequationes Math.,* **61** (2001), 205–211.

[35] On the characterization of Weierstrass's sigma function, In: *Functional Equations — Results and Advances* (eds.: Z. Daróczy and Zs. Páles), Kluwer, 2002, 29–79. (with W. Sander)

[36] Continuity implies $\mathcal{C}^\infty$ for solutions of functional equations — even with few variables, *Acta Sci. Math.* (*Szeged*), **67** (2001), 719–734.

[37] On a problem of S. Mazur., *Publ. Math. Debrecen,* **59** (2001), 187–193.

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[39] Measurability implies continuity for solutions of functional equations — even with few variables, *Aequationes Math.,* **65** (2003), 236–266.

[40] On Cauchy-differences that are also quasisums, *Publ. Math. Debrecen,* **65** (2004), 381-398. (with Gy. Maksa and Zs. Péles)

[41] Regularity of functional equations on Lie groups, *Annales Univ. Sci. Budapest., Sect. Comp.,* **24** (2004), 239-246.

[42] Report on the largest known twin primes, *Annales. Univ. Sci. Budapest., Sect. Comp.,* **25** (2005), 247-248. (with T. Csajbók, G. Farkas, Z. Járai and J. Kasza)

[43] Report on the largest known Sophie Germain and twin primes, *Annales Univ. Sci. Budapest., Sect. Comp.,* **26** (2006), 181-183. (with T. Csajbók, G. Farkas, Z. Járai and J. Kasza)

[44] Laudatio to Professor Imre Kátai, *Annales Univ. Sci. Budapest., Sect. Comp.,* **28** (2008), 5-14.

[45] On representing integers as quotients of shifted primes, *Annales Univ. Sci. Budapest., Sect. Comp.,* **28** (2008), 157-174. (with T. Csajbók and J. Kasza)

[46] On the measurable solutions of a functional equation, *Aequationes Math.,* **80** (2010), 131-139.

[47] On measurable functions satisfying multiplicative type functional equations almost everywhere. In print. (with K. Lajkó and F. Mészáros)

[48] Regularity properties of measurable functions satisfying a multiplicative type functional equation almost everywhere. To appear.

[49] Cache optimized linear sieve, *Acta Univ. Sapientiae, Informatica,* to appear (with E. Vatai)

Books and lecture notes

[50] *Mérték és integrál,* (a) Nemzeti Tankönyvkiadó, Budapest, 2002, 198 oldal. (b) *Mérték és integrálelmélet,* Kézirat, KLTE TTK, Tankönyvkiadó, Budapest, 1988; Reprint: 1992, 187 oldal. (Measure and integration. Lecture notes, 198 pages.)

[51] *Analízis és valószínűségszámítás,* Kézirat, KLTE TTK, Debrecen, 1989, 68 oldal. (Analysis and probability theory. Lecture notes, 68 pages.)

[52] *Modern alkalmazott analízis,* (a) Typotex, Budapest, 2007, 661 oldal. (b) Kézirat, KLTE TTK, Debrecen, 1992, 361 oldal. (Modern applied analysis. Lecture notes, 2007, 661 pages.)

[53] *Regularity Properties of Functional Equations,* Leaflets in Mathematics. Janus Pannonius University, Pécs, 1996, 77 pages.

[54] *Regularity Properties of Functional Equations in Several Variables,* 363 pages, Advances in Mathematics (Springer) **8.**, Springer, New York, 2005.

[55] *Számítógépes számelmélet,* Kézirat, ELTE IK, Budapest, 2004, 73 oldal és 165 oldal Maple példa. (Computational number theory. Lecture notes, 73 pages with 165 pages of Maple examples.)

[56] *Bevezetés a matematikába,* (a) ELTE Eötvös Kiadó, Budapest, 2009, 443 oldal és 488 oldal Maple példa, (b) ELTE Eötvös Kiadó, Budapest, 2004, 241 oldal. (Discrete mathematics. Lecture notes, 2009, 443 pages with 488 pages of Maple examples.) (with G. Farkas, Á. Fülöp, J. Gonda, A. Kovács, Cs. Láng and J. Székely)

[57] *Bevezetés az analízisbe I,* Kézirat, BME TTK, Budapest, 2004, 119 oldal. (Calculus I. Lecture notes, 119 pages.)

[58] *Bevezetés az analízisbe II,* Kézirat, BME TTK, Budapest, 2004, 120 oldal. (Calculus II. Lecture notes, 120 pages.)

[59] *Bevezetés az analízisbe III.* Kézirat, BME TTK, Budapest, 2004, 114 oldal. (Calculus III. Lecture notes, 114 pages.)

[60] *Komputeralgebra,* Könyvrészlet az Informatikai algoritmusok 1. című könyvben. ELTE Eötvös Kiadó, Budapest, 2004, 38–93. (Computer algebra. Part in the book Algorithms in computer science 1.) (with A. Kovács)

[61] *Kalkulus I.* Kézirat, BME TTK, Budapest, 2006, 125 oldal. (Calculus I. Lecture notes, 125 pages.)

[62] *Kalkulus II.* Kézirat, BME TTK, Budapest, 2006, 168 oldal. (Calculus II. Lecture notes, 168 pages.)

[63] *Kalkulus III.* Kézirat, BME TTK, Budapest, 2011, 127 oldal. (Calculus III. Lecture notes, 127 pages.)

[64] *Komputeralgebrai algoritmusok: Maple példák,* ELTE IK, Budapest, 2010, 157 oldal. (Algorithms in computer algebra: Maple examples, 157 pages.)

Software

[65] *SORT.* Very fast and space efficient sorting and pattern matching tool. User's guide: 4 pages, Z80 assembly: 48 pages, VT20/A, 1982.

[66] *SORT/IV.* Previous program implemented under a different operating system. User's guide: 4 pages, Z80 assembly: 72 pages, VT20/IV, 1985.

[67] *LIBRARY.* Macros and library functions for developing assembly programs. User's guide: 18 pages, Z80 assembly: 50 pages, VT20/A, 1982.

[68] *LIBRARY.* Previous library implemented under a different operating system. Z80 assembly: 97 pages, Forth: 14 pages, VT20/IV, 1985.

[69] *DIAS.* Disassembler for de-compiling executable files into source code with labels. User's guide: 5 pages, Z80 assembly: 32 pages, VT20/A, 1983.

[70] *DIAS/IV.* Previous program implemented under a different operating system. User's guide: 5 pages, Z80 assembly: 38 pages, VT20/IV, 1985.

[71] *MIRAK.* Relational database management system implementing relation algebra. User's guide: 31 pages, BASIC: 6 pages, Z80 assembly: 41 pages, Sinclair Spectrum, 1983.

[72] *MIRAK.* Fully revised version of the previous program for business applications. Virtual file management. User's guide: 21 pages, Z80 assembly: 241 pages, VT20/A, 1983.

[73] *BUSINESS FORTH SYSTEM.* High speed Forth language system with additional data processing features. Handles five different file types, implements string arithmetic, tracing and multi-tasking. User's guide: 74 pages, Z80 assembly: 206 pages, Forth: 11 pages, VT20/IV, 1985.

[74] *DATMAN.* Data management system. Includes eight different functions using the same data form, such as entering, modifying and verifying data, different kinds of data queries, etc. High level language programming front-end. User's guide: 10 pages, Forth: 18 pages, Forth, VT20/IV, 1985.

[75] *DATMAN4.* Multi-tasking, multi-terminal version of DATMAN using a time sharing operating system written by the author. User's guide: 10 pages, Forth: 19 pages, Forth, VT20/IV, 1986.

[76] *FLOAT.* Floating point arithmetic library. Real and complex arithmetic and elementary functions, expression evaluation. User's guide: 32 pages, Z80 assembly: 36 pages, VT20/A, 1986.

[77] *FLOAT/IV.* Previous program implemented under a different operating system. User's guide: 2 pages, Forth: 4 pages, VT20/IV, 1986.

[78] *FORTH ASSEMBLER.* Enables one writing Forth words in assembly language as an extension to Forth. User's guide: 2 pages, Forth: 4 pages, VT20/IV, 1985.

[79] *KRIPT.* Encryption-decryption program allowing multiple keys. User's guide: 1 pages, Z80 assembly: 8 pages, VT20/A, 1985.

[80] *KRIPT/IV.* Previous program implemented under a different operating system. User's guide: 1 pages, Z80 assembly: 8 pages, VT20/IV, 1985.

[81] *CSEBISEV.* Subroutines computing Chebychev polynomials upto a 60-digit precision. User's guide: 2 pages, Forth: 5 pages, VT20/IV, 1986.

[82] *FFT.* Fast Fourier Transform for physical signal processing and analysis. User's guide: 1 pages, Z80 assembly 2 pages, BASIC: 4 pages, Sinclair Spectrum, 1985.

[83] *ARCHIV/IV.* Archivation program. Increases disc capacity by 40 to 200 percent. User's guide: 1 pages, Z80 assembly: 20 pages, VT20/IV, 1986.

[84] *ARCHIV.* Previous program implemented under a different operating system. User's guide: 1 pages, Forth: 7 pages, VT20/A, 1986.

[85] *FORMAT.* Document formatting program. User's guide: 1 pages, Forth: 7 pages, VT20/IV, 1986.

[86] *Accounting and supply management system.* BASIC: 18 pages, Z80 assembly: 192 pages, VT20/A, 1983; BASIC: 30 pages, Z80 assembly: 157 pages, VT20/A, 1984. (with I. Matisz)

[87] *Accounting and supply management system.* Forth: 104 pages, VT20/IV, 1985. (with I. Matisz)

[88] *CALC.* Spreadsheet program. BASIC: 12 pages, Sinclair Spectrum and ZX81, 1984; BASIC: 6 pages, 6509 assembly: 5 pages, Commodore 720, 1985. (with I. Matisz)

[89] *Chief account-book and bank account administration system.* Program plan: ≈120 pages, Z80 asssembly: ≈100 pages, VT20/A, 1987. (with A. Ari and M. Buri)

[90] *Buy up and sell administration system.* Made for BARNEVÁL company, Debrecen. Program plan: ≈120 pages, Forth: ≈100 pages, VT20/IV, 1986. (with I. Matisz and Béláné Kovács)

[91] *Stock administration system.* Program plan: ≈120 pages, Foxbase: ≈150 pages, IBM XT/AT network, 1987. (with M. Lénárd, I. Makai, Zs. Páles and Gy. Szabó)

[92] *Travelling administration system.* Program plan: 65 pages, Foxbase: 193 pages, IBM XT/AT network, 1989.

[93] *Payment administration system.* Program plan: 71 pages, Foxbase: 47 pages, IBM XT/AT network, 1990. (with B. Kis)

[94] *Hungarian hyphenation and fonts for TEX.* Macro package as an extension to the TEX sytem to allow hyphenation of Hungarian texts. Hungarian accented letters have been implemented according to the suggestion of D. E. Knuth, the author of TEX. A total of 1736 Hungarian fonts. TEX: ≈20 pages, METAFONT: ≈10 pages, IBM XT/AT, 1991. (with Z. Járai)

[95] *Number systems and fractal geometry.* We used this program with Karl-Heinz Indlekoferrel and Imre Kátai to investigate various questions about number systems and fractal geometry. Maple: ≈34 pages, SUN, 1993–94.

[96] *Classical arithmetic algorithms.* C: 17 pages, SPARC-V8 assembly: 15 pages, Unix, 1994.

[97] *Karatsuba multiplication.* (First version joint work with Béla Almási. This makes up 27% of the new version.) Program draft: 3 pages, SPARC-V8 assembly: 40 pages, Unix, 1994.

[98] *Multiplication using Fermat number transform.* (With contibution of Béla Almási in some parts.) Program draft: 6 pages, C: 25 pages, SPARC-V8 assembly: 37 pages, Unix, 1994.

[99] *Complex FFT multiplication.* Program draft and Maple program: 16 pages, C: 35 pages, SPARC-V8 assembly: 76 pages, Unix, 1995.

[100] *Modular arithmetic for short and special modulus.* SPARC-V8 assembly: 53 pages, Unix, 1995.

[101] *Sieve programs.* C: 24 pages, Unix, 1994-1996.

[102] *Probabilistic primality test.* Our team with the leading of Karl-Heinz Indlekofer set up seven world records in the field of computational number theory. This program together with the previous six gives approximately 80%, the most decisive part of the programming work. C: 19 pages, Unix, 1994–1995)

[103] *General arithmetic program package.* Programming interface for the arithmetic subroutines above. Program draft: 2 pages, CWEB: approx. 17 pages, Unix, 1997.

[104] *Elliptic curve primality proving program.* High performance programme for primality testing. Program draft: 56 pages, CWEB: up till now approx. 47 pages, Unix, 1997.

[105] *FAP: Fast Arithmetic Package.* General purpose fast arithmetic subroutines. CWEB: approx. 280 pages, CWEB interface to muPAD: approx. 30 pages, MMIX: approx. 140 pages, SuperSPARC assembly: approx. 50

pages, UltraSPARC assembly: approx. 20 pages, AMD64 assembly: approx. 50 pages, Unix, 2001–. (with Z. Járai)

[106] *Integer FFT multiplication for* 76000 *digits numbers.* C: 5 pages, Cell assembly: 135 pages, Linux, 2008.

[107] *Complex FFT multiplication up to* 800000 *digits.* C: 10 pages, Cell assembly: 125 pages, Linux, 2010.

[108] *Integer FFT multiplication up to* 80000 *digits.* C: 18 pages, Cell assembly: 145 pages, Linux, 2010.

Conference proceedings

[109] Remark 17. Solution of two problems of W. Sander, *Aequationes Math.,* **19** (1979), 286–288.

[110] Remark 12. In: *Proceedings of the 23th International Symposium on Functional Equations,* Centre for Information Theory, University of Waterloo, Waterloo, Ontario, Canada, 1985, 57–58.

[111] Remark 19. Solution of a problem of C. Alsina. In: *Proceedings of the 23th International Symposium on Functional Equations,* Centre for Information Theory, University of Waterloo, Waterloo, Ontario, Canada, 1985, 64. (with Gy. Maksa)

[112] Remark 11. Solution of the problem 4 of C. Alsina and J.–L. Garcia–Roig, *Aequationes Math.,* **35** (1988), 120
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[113] Interval filling sequences and continuous additive functions, *26th International Symposium on Functional Equations,* Sant Feliu de Guixols, Spain, 1988.

[114] Remark 22 (to a theorem of J. Aczél), *Aequationes Math.,* **37** (1989), 111.

[115] New results in the regularity theory of functional equations, *32th International Symposium on Functional Equations,* Gargnano, Italy, 1994.

[116] Remark 30. (Solution of a problem of K. Lajkó.), *Aequationes Math.,* **49** (1995), 196.

[117] Remark 23. (To the talk of R. Badora.) *Aequationes Math.,* **51** (1996), 178.

[118] Remark 10. Solution of a problem of T. M. K. Davidson. *Aequationes Math.,* **53** (1997), 190. (with Zs. Páles)

[119] Some world records in computational number theory. In: *Aritmetical Functions,* Leaflets in Mathematics, Pécs, 1998, 49–56. (with K.-H. Indlekofer)

[120] Új eredmények a többváltozós függvényegyenletek regularitáselméletében. Előadások a Magyar Tudományos Akadémián. Közgyűlési Előadások, 2000 május. (Hungarian Academie of Sciences.)

[121] 24. Remark (To Aczél's 4. Problem), *Aequationes Math.,* **65** (2003), 314–315. (with Gy. Maksa and Zs. Páles)

[122] Solution of a problem of Zsolt Páles, *Ann. Math. Silesianae,* **17** (2003), 81–82.

[123] Comparison of methods advancing regularity properties for functional equations with few variables (in Hungarian). Előadások a Magyar Tudományos Akadémián. Közgyűlési Előadások, 2006 május.

[124] 3. Remark (to a problem of W. Jarczyk). *Aequationes Math.,* **81** (2011), 306.

Dissertations, technical reports and non-published lecture notes

[125] *Átrendezést tartalmazó egyenlőtlenségek.* Diákköri dolgozat. (Rearrangement inequalities.) KLTE, Debrecen, 1971, 16 pages.

[126] *Mérhető függvények korlátosságáról.* Diákköri dolgozat. (On boundedness of measurable functions.) KLTE, Debrecen, 1973, 15 pages.

[127] *Függvényegyenletek mérhető megoldásairól.* (Measurable solutions of functional equations.) KLTE, Debrecen, 1976. (PhD thesis.) 46 pages.

[128] *Függvényegyenletek regularitási tulajdonságai.* (Regularity properties of functional equations.) (a) Kandidátusi értekezés. Debrecen, 1989, 96 pages; (b) Kandidátusi értekezés tézisei. Debrecen, 1989, 21 pages. (Thesis for candidate degree.)

[129] *Solutions of functional equations of bounded variation.* KLTE TTK Debrecen, Technical report 91/16, 4 pages.

[130] *Spektrálelmélet.* (Spectral theory.) Lecture notes, Debrecen, 1992, 20 pages.

[131] *Cryptology.* Lecture notes, Paderborn, 1992, 12 pages.

[132] *A/D converters and interval filling sequences.* Technical report, Paderborn, 1992, 3 pages.

[133] *The Čech-Stone compactification.* Lecture notes, Paderborn, 1992, 11 pages.

[134] *Report on fast software algorithms for cryptology.* Program draft, Paderborn, 1993, 7 pages.

[135] *Bohr compactification.* Lecture notes, Paderborn, 1993, 6 pages.

[136] *Parallel computing in number Systems.* Program draft. Paderborn, 1993, 20 pages.

[137] *Parallel computing division.* Program draft. Paderborn, 1994, 7 pages.

[138] *Large twin primes.* Program draft and Maple program. Paderborn, 1994, 18 pages.

[139] *Large Sophie Germain primes.* Program draft and Maple program. Paderborn, 1994, 20 pages.

[140] *The Waring conjecture.* Program draft and Maple program. Paderborn, 1994, 31 pages.

[141] *Large non-Mersenne primes.* Program draft and Maple program. Paderborn, 1994, 18 pages.

[142] *Primetests. Theory and exercises with solutions.* Lecture notes and Maple program. Paderborn, 1994, 64 pages.

[143] *Függvényegyeletek regularitási tulajdonságai.* (Regularity properties of functional equations.) (a) Habilitációs értekezés. Debrecen, KLTE, 1994, 132 pages; (b) Habilitációs értekezés tézisei. Debrecen, KLTE, 1994, 34 pages. (Habilitation thesis.)

[144] *High speed division.* Program draft. Paderborn, 1995, 2 pages.

[145] *Fermat primes.* Program draft. Paderborn, 1995, 4 pages.

[146] *Divisors of Fermat numbers.* Program draft. Paderborn, 1995, 3 pages.

[147] *Largest prime.* Program draft and Maple program. Paderborn, 1995, 19 pages.

[148] *Largest primes having the form* $n^2 + 1$, $n^4 + 1$. Program draft, Maple program. Paderborn, 1995, 12 pages.

[149] *Fractals and number systems on computers.* Lecture notes, Paderborn, 1996, 37 pages.

[150] *Factorization with elliptic curves.* Program draft, Paderborn, 1996, 10 pages.

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[152] *Large twin and Sophie Germain primes.* Program draft and Maple program. Paderborn, 1996, 17 pages.

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[154] *Find the largest prime.* Program draft, Paderborn, 1996, 5 pages.

[155] *Exact prime test with elliptic curves: Assymptotic running time analysis.* Lecture notes, Paderborn, 1997, 9 pages.

[156] *Analízis programozó matematikusoknak.* (Analysis for computer science studens.) Lecture notes, Budapest, 1998, 50 pages.

[157] *Analízis programozó matematikusoknak II.* (Analysis for computer science studens II.) Lecture notes, Budapest, 1998, 50 pages.

[158] *Analízis programozó matematikusoknak III.* (Analysis for computer science studens III.) Lecture notes, Budapest, 1999, 50 pages.

[159] *Analízis programozó matematikusoknak IV.* (Analysis for computer science studens IV.) Lecture notes, Budapest, 1999, 141 pages.

[160] *Többváltozós függvényegyenletek regularitási tulajdonságai.* (Regularity properties of functional equations in several variables.) (a) Akadémiai doktori értekezés. 1999, 252 pages; (b) Akadémiai doktori értekezés tézisei. 1999, 46 pages. (Thesis for D.Sc. degree.)