

DEBRECENI EGYETEM
TERMÉSZETTUDOMÁNYI KAR

KIEGÉSZÍTŐ KÉRELEM
ALKALMAZOTT MATEMATIKUS
MSc MESTERKÉPZÉSI SZAK
ANGOL NYELVŰ INDÍTÁSÁRA
SZÁMÍTÁSTUDOMÁNYI SZAKIRÁNY

DEBRECEN
2007.

A kérelem címzettje: az oktatási és kulturális miniszter
Véleményező: a Magyar Akkreditációs Bizottság

I. Adatlap

1. A kérelmező felsőoktatási intézmény **neve, címe;**
Debreceni Egyetem, 4010 Debrecen, Egyetem tér 1.
2. **Kari tagozódású** felsőoktatási intézmény esetén a **képzésért felelős kar megnevezése**
Természettudományi Kar
3. Az indítandó **alapszak megnevezése**
Applied Mathematics, MSc
4. Az oklevélben szereplő **szakképzettség megnevezése**
Master of Science, Applied Mathematics
5. Az indítani tervezett **szakirány(ok) megnevezése :**
Mathematics of Computer Science
6. A képzési idő;
 - a **félévek**, valamint az oklevél megszerzéséhez szükséges **kreditek száma**
4 félév, 120 kredit
 - az **összórászám**on (összes hallgatói tanulmányi munkaidőn) belül a **tanórák** (kontaktórák) száma
kb. 1200 óra
 - a szakmai gyakorlat időtartama és jellege: –
7. A szak **indításának tervezett időpontja: 2007. szeptember**
8. A szakért **felelős oktató megnevezése és aláírása**

Dr. Nagy Péter
egyetemi tanár

9. **Dátum**, és az intézmény **felelős vezetőjének megnevezése és cégszerű aláírása**

Debrecen, 2007. május 5.

Prof. Dr. Nagy János
rektor, egyetemi tanár

Mellékletek: tantervi táblázat, és a tantárgyak leírása angol nyelven
oktatók személyi adatlapjai angol nyelven

Module	Subject	Hours/week				Examination	Credit	
		1	2	3	4			
Theoretical	Linear Algebra and Applications	2+0				C	2	20
	Appl. of Algebra and Number Theory	2+0				C	2	
Found.	Applied Analysis	2+2				C, T	4	
	Appl. of Geometry and Topology	2+2				C, T	4	
	Applied Probability	2+1				C, T	3	
	Appl. of Math. Statistics	2+1				C, T	3	
	Applications of Informatics	0+2				T	2	
Advanced	Finite Fields and their Applications		2+2			C, T	5	25
	Applied Graph Theory	2+2				C, T	5	
Professional	Convex Optimization		2+2			C, T	5	
	Discrete Optimization		2+2			C, T	5	
Module	Orthogonal Polynomials		2+0			C	3	
	Appl. of Ordinary Diff. Equations		2+1			C, T	4	
	Partial Diff. Equations with Appl.		2+1			C, T	4	
	Stochastic Processes		2+2			C, T	5	
	Theory of Algorithms		2+2			C, T	5	
Computer	Data Mining			2+2		C, T	5	34
	The Math. of WWW and Networks			2+2		C, T	5	
Science	Complexity Theory			2+2		C, T	5	
	Design, Analysis and Impl. of Algorithms and Data Structures			3+3		C, T	7	
Module	Cryptography and Data Security			3+3		C, T	7	
	Theory of Information, Coding and Symmetric Structures			2+2		C, T	5	
Elective	Applied Combinatorics				2+2	C, T	5	
	Artificial Intelligence				2+2	C, T	5	
	Game Theory				2+2	C, T	5	
	Comput. Number Theory, Comput. Algebraic Pr. Packages				0+4	C, T	5	
	Analysis with Computer				0+3	T	3	
	Computer-aided Diff. Geometry				2+2	C, T	5	
	First-Order Logic				3+0	C	4	
	Finite Geometries				2+2	C, T	5	
	Quasigroups and Comb. Structures				2+2	C, T	5	
	Lattice Theory				2+0	C	3	
	Discrete Tomography				2+0	C	3	
	Iterative Fixed Point Theory and its Applications				2+0	C	3	
	Extremum Problems				2+1	C	4	
	Thesis							20
	Free Optional Courses							6
	Total Credits							120

Subjects

Subject: Linear Algebra and Applications

Classes/week: 2 hour lecture

ECTS Credit Points: 2

Prerequisites: None

Lecturers: István Gaál, DSc; Gábor Nyul, PhD

Topics: Inner product spaces. Normal and unitary transformations, unitary matrices, spectral theorem. Similar matrices and canonical form of polynomial matrices. Minimal polynomial of linear transformations and matrices, Cayley-Hamilton theorem. Jordan normal form and its calculation. Eigenvector and root vector. Quadratic forms, Sylvester theorem.

Compulsory/Recommended Readings:

P.R. Halmos: Finite dimensional vector spaces.

H.Anton and R.C.Busby: Contemporary linear algebra, John Wiley & Sons, 2003.

Subject: Applications of Algebra and Number Theory

Classes/week: 2 hour lecture

ECTS Credit Points: 2

Prerequisites: None

Lecturers: Ákos Pintér, PhD; Csaba Rakaczki, PhD

Topics: Algebraic structures, generating systems, factor structures, homomorphism. Group theory: symmetric groups, Lagrange's theorem, normal subgroups, factor groups. Ring theory: ideals and factor rings. Fields and finite fields.

Quadratic congruences, Legendre symbols, reciprocity theorem; binomial congruences of higher degree, primitive root, discrete logarithms (index). Algebraic number theory: algebraic integers, units, norm. Unique prime factorization in special quadratic number fields. Continued fractions and their applications for Pellian equations.

Compulsory/Recommended Readings:

Bódi Béla: Algebra I, Kossuth Egyetemi Kiadó, Debrecen, 1999.

Bódi Béla: Algebra II, Kossuth Egyetemi Kiadó, Debrecen, 2000.

Fuchs László: Algebra, Nemzeti Tankönyvkiadó, Budapest.

Freud Róbert -- Gyarmati Edit: Számelmélet, Nemzeti Tankönyvkiadó, Budapest, 2004.

Erdős Pál -- Surányi János: Válogatott fejezetek a számelméletből, Polygon, Szeged, 1996.

Sárközy András -- Surányi János: Számelmélet feladatgyűjtemény, Nemzeti Tankönyvkiadó, Budapest.

K.H. Rosen: Elementary Number Theory and Its Applications, Addison Wesley, 1985.

Subject: Applied Analysis

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 4

Prerequisites: None

Lecturer: Lajos Molnár, DSc; Mihály Bessenyei, PhD

Topics: Metric spaces: topological notions, sequences, limit and continuity. Functions of bounded variation. Riemann-Stieltjes integral, line integral. Inverse function theorem, implicit function theorem. Conditional extremum problems.

Measure theory, Lebesgue integral. Hilbert spaces, orthonormal systems.

Basic concepts of the theory of ordinary differential equations. Linear differential equations and systems of linear differential equations. Elements of numerical analysis.

Compulsory/Recommended Readings:

W. Rudin, Principles of Mathematical Analysis

W. Rudin, Real and Complex Analysis

H.L. Royden, Real Analysis

E.A. Coddington, An Introduction to Ordinary Differential Equations

A. Ralston, A First Course in Numerical Analysis

Subject: Applications of Geometry and Topology

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 4

Prerequisites: None

Lecturers: László Kozma, PhD; Csaba Vincze, PhD

Topics: Vector analysis: differential calculus, vector calculus in space. Space curves, torsion and curvature of curves. The presentation of surfaces, first and second fundamental forms of surfaces. Classical integral theorems. Topics fro topology: The concept of topological and metrical spaces. Sequences and limits. Compactness and connectedness of sets. Fundamental group of spaces.

Compulsory/Recommended Readings:

Janich, Klaus: Vector Analysis, Springer Verlag, 2000.

Bloch. E. D.: A first course in geometric topology and differential geometry, Birkhauser, 1996.

Subject: Applied Probability

Classes/week: 2 hour lecture, 1 hour seminar

ECTS Credit Points: 3

Prerequisites: None

Lecturers: Gyula Pap, DSc; István Fazekas, PhD; Mátyás Barczy, PhD

Topics: Combinatorial probability, sieve formulas, urn models. Conditional probability, Bayes theorem, stochastic independence. Discrete random variables, binomial, negative bi nomial, hypergeometric, Poisson distributions. General notion of random variables and distribution functions. Expectation, variance, median, moments. Important continuous distributions: uniform, exponential, normal, Cauchy, lognormal. Joint distributions, marginal distributions, conditional distributions. Expectation vector, covariance matrix. Multidimensional normal distributions. Convolution, Markov and Tschebyshev inequalities, weak law of large numbers. Stirling formula, Moivre-Laplace theorem. Measure theoretical model of probability theory. Borel-Cantelli lemma. General notion of conditional probability. Series of independent variables. Strong law of large numbers. Basics of characteristic functions. Central limit theorems.

Compulsory/Recommended Readings:

Feller, W.: *An Introduction to Probability Theory and its Applications*, Vol.1. John Wiley & Sons, Inc., New York-London-Sydney 1968.

Graham, R. L., Knuth, D. E., Patashnik, O.: *Concrete Mathematics. A Foundations for Computer Science*. Addison-Wesley Publishing Company, Reading, MA, 1994.

Pap, Gyula: Probability theory 1 and 2, <http://www.inf.unideb.hu/valseg/dolgozok/papgy/okt.html>

Fazekas, István: Probability theory (in Hungarian) Kossuth Egyetemi Kiadó, Debrecen, 2003.

Subject: Applications of Mathematical Statistics

Classes/week: 2 hour lecture, 1 hour seminar

ECTS Credit Points: 3

Prerequisites: None

Lecturers: István Fazekas, PhD; Endre Iglói

Topics: Basic notions: regression, statistical space, sample, empirical distribution, Glivenko-Cantelli theorem, Kolmogorov-Smirnov theorems, sufficiency, completeness, statistics.

Basic concepts of estimation theory, maximum-likelihood estimator, Fisher information, Rao-Cramer inequality, Rao-Blackwell theorem, Bayesian method, method of moments.

Testing statistical hypotheses. Neyman-Pearson lemma. Confidence intervals. Parametric tests: u-, t-, and F-tests. Linear model. Nonparametric tests: chi-square and Kolmogorov-Smirnov tests. Constructing tests. Asymptotic properties of tests.

Compulsory/Recommended Readings:

Williams, D. Weighing the odds. A course in probability and statistics. Cambridge University Press, Cambridge, 2001.

N.C. Giri, Introduction to Probability and Statistics, Dekker, New York, 1975.

Stoodley, K.D.C. – Lewis, T. – Stainton, C.L.S.: Applied statistical techniques. Ellis Horwood, Chichester, 1980.

Subject: Applications of Informatics

Classes/week: 2 hour seminar

ECTS Credit Points: 2

Prerequisites: None

Lecturers: Attila Bérczes, PhD; István Pink, PhD

Topics: Using program packages in algebra, number theory, analysis, geometry and numerical analysis. Basics of linear programming. On the frame of the the course the students will study the use of a program package.

Compulsory/Recommended Readings:

A. Schrijver: Theory of Linear and Integer Programming, Wiley, New York, 1998.

Pethő Attila: Algebraische Algorithmen, Vieweg, 1999.

J. Canon – W. Bosma: Handbook of MAGMA, elektronikusan elérhető segédanyag.

Molnárka Győző, Gergő Lajos, Wettl Ferenc, Horváth András, Kallós Gábor: A Maple V és alkalmazásai, Springer Tudományos Kiadó, 1966.

Juhász Imre: Számítógépi geometria és grafika, Miskolci Egyetemi Kiadó, 1993.

Kurusa Á., Szemők Á.: A számítógépes ábrázoló geometria alapjai, Polygon, 1999.

M. Klincsik, Gy. Maróti: Maple 8 tételben a matematikai problémamegoldás művészetéről, Novadat, Győr, 1995.

Subject: Finite Fields and their Applications

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Applications of Algebra and Number Theory

Lecturers: Piroska Lakatos, PhD; Szabolcs Tengely, PhD

Topics: The theory of finite fields and its applications in the error-correcting codes and its applications. Algebraic algorithms in the applications of the finite fields.

Compulsory/Recommended Readings:

Emil Kiss, Introduction of Abstract Algebra (Hungarian)

<http://www.cs.elte.hu/~ewkiss/bboard/algebrabook>

Lidl, R. and Niederreiter, H., Finite Fields, Cambridge, England, Cambridge University Press, 1994.

P. Lakatos. Algebraic coding theory (Hungarian), Lectures notes, Institute of Mathematics, Debrecen 1998.

D. R. Stinson., Cryptography: Theory and Practice, CRC Press, 1995.
A. J. Menezes, P. C. van Oorschot and S. A. Vanstone., The Handbook of Applied Cryptography, CRC Press. 1996. <http://www.cacr.math.uwaterloo.ca>

Subject: Applied Graph Theory

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Lajos Hajdu, PhD; Sándor Turjányi, dr. Univ.

Topics: k-connected graphs, disjoint trees, increasing the connectedness level. Colouring of graphs and hypergraphs, perfect graphs. The theory of pairing. Embedding of graphs. Strongly regular graphs. The wholeness condition and its applications. Random methods: expected value and second moment method, random graphs, limit function. Extremal combinatorics: classical theorems on extremal sets and extremal graphs.

Compulsory/Recommended Readings:

Bollobás Béla, Random graphs. 2nd ed. Cambridge Studies in Advanced Mathematics. 73. Cambridge: Cambridge University Press. xviii, 498 p. (2001).

Bollobás Béla, Extremal graph theory. Reprint of the 1978 original. Mineola, NY: Dover Publications. xx, 488 p. (2004)

Gross, Jonathan; Yellen, Jay, Graph theory and its applications. 2nd ed.; [B] Discrete Mathematics and its Applications. Boca Raton, FL: Chapman & Hall/CRC. 779 p. (2006). [ISBN 1-58488-505-X/hbk]

G. Gutin & J. Bang-Jensen, Digraphs: Theory, Algorithms and Applications, Springer (2000)

Kocay, William; Kreher, Donald L. Graphs, algorithms, and optimization. [B] Discrete Mathematics and its Applications. Boca Raton, FL: Chapman & Hall/CRC. xv, 483 p. (2005). [ISBN 1-58488-396-0/hbk]

L. Lovász & M.D. Plummer, Matching Theory (North-Holland 1986)

Subject: Convex Optimization

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Linear Algebra and Applications

Lecturers: Péter T. Nagy, DSc; Gábor Nyul, PhD

Topics: Continuous and stochastic optimizations. Alternative theorems, Minkowski-Weyl theorem, pivot and inner point algorithms, ellipsoid method; convex optimization: separation theorems, convex Farkas theorem, Karush-Kuhn-Tucker conditions. Lagrange function and saddle point theorem. Newton's method, inner point algorithm. Basic methods of stochastic programming, applications and practical questions.

Compulsory/Recommended Readings:

Berkovitz: Convexity and Optimization in \mathbb{R}^n , John Wiley, New York, 2002.

Boyd – Vandenberghe: Convex Optimization, Cambridge University Press, Cambridge, 2003.

Prékopa: Stochastic Programming, Kluwer, Dordrecht, 1995.

Subject: Discrete Optimization

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Linear Algebra and Applications

Lecturers: Péter T. Nagy, DSc; Gábor Nyul, PhD

Topics: Discrete optimization. Max-flow and min-cut theorem, Egerváry duality theorem, combinatorics of polyhedra, totally dual integrality, matching polyhedra; graph algorithms, Hungarian method, Edmonds-Karp algorithm; algorithmic approach to NP-complete problems: dynamical programming, Lagrange-relaxation, constraints and separation, greedy algorithms; applications and practical problems.

Compulsory/Recommended Readings:

Grötschel – Lovász – Schrijver: Geometric algorithms and combinatorial optimization, Berlin - New York, Springer-Verlag, 1988.

Schrijver: Combinatorial Optimization – Polyhedra and Efficiency, Springer, Berlin, 2003.

Subject: Orthogonal polynomials

Classes/week: 2 hour lecture

ECTS Credit Points: 3

Prerequisites: Applied Analysis

Lecturers: Zsolt Páles, DSc; Zoltán Boros, PhD

Topics: Hilbert spaces, orthonormal systems. Pointwise and uniform convergence of trigonometric and orthogonal polynomial series. Fourier transformation. Basics of approximation theory. Stone's theorem. Bohmamm-Korovkin theorem. Best approximation by polynomials. Jackson's theorems. Interpolation. Spline functions. Approximation by rational functions.

Compulsory/Recommended Readings:

Paál L. Gy.: Orto gonális függvény sorok (Orthogonal series), Tankönyvkiadó, Budapest, 1982.

Szőkefalvi-Nagy B.: Valós függvények és függvény sorok (Real functions and function series), Tankönyvkiadó, Budapest, 1972.

I.P. Natanson: Konstruktív függvénytan (Constructive theory of functions), Tankönyvkiadó, Budapest, 1952.

N.I. Ahijezzer: Előadások az approximáció elméletéről (Lectures on approximation theory), Akadémiai Kiadó, Budapest, 1951.

Subject: Applications of Ordinary Differential Equations

Classes/week: 2 hour lecture, 1 hour seminar

ECTS Credit Points: 4

Prerequisites: Applied Analysis

Lecturers: László Székelyhidi, DSc; Rezső L. Lovas, PhD

Topics: Stability theory. Periodic solutions. Boundary value problems for linear differential equations. The basic problem of the calculus of variation. Euler-Lagrange differential equations. Geometrical methods in mechanics. Lagrange- and Hamilton- systems. Legendre transformation. Euler-Lagrange differential equations, Hamilton-equations. Symmetry and preservation theorems.

Compulsory/Recommended Readings:

V.I. Arnold, Ordinary differential equations (in Hungarian), Műszaki Könyvkiadó, Budapest, 1987.

A. Kósa ., Calculus of variations (in Hungarian), Tankönyvkiadó, Budapest, 1972.

M. de León, P.R. Rodrigues, Methods of differential geometry in analytical mechanics, Elsevier Science, 1989.

R. Abraham, J.E. Marsden, Foundations of mechanics, Benjamin/Cummings, 1978

Subject: Partial Differential Equations with Applications

Classes/week: 2 hour lecture, 1 hour seminar

ECTS Credit Points: 4

Prerequisites: Applied Analysis

Lecturers: Zoltán Boros, PhD; Rezső L. Lovas, PhD

Topics: Basic concepts, elementary methods. Characteristic function, conservation laws. First-order quasilinear equations. Theory of characteristics for first-order equations and Cauchy problems. Classification and canonical transformation of second-order linear equations. Goursat and Cauchy problem for hyperbolic equations. Initial/boundary-value problem for the wave equation, Fourier's method. Initial/boundary-value problem for the heat equation, maximum principle. Cauchy problem for the heat equation, Duhamel's principle. Boundary-value problems for the potential equation. Fixed point theorems with applications.

Compulsory/Recommended Readings:

G. Hellwig: *Partial Differential Equations*. B.G. Teubner, Stuttgart, 1977.

M. Renardy, R. C. Rogers: *An Introduction to Partial Differential Equations*. Springer-Verlag, New York, 1993.

Subject: Stochastic Processes

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Applied Probability

Lecturers: Gyula Pap, DSc; Mátyás Barczy, PhD; Márton Ispány, PhD

Topics: Square integrable processes. Weakly stationary processes, linear filters. Basics of time series analysis. Strongly stationary processes, ergodic theorems. Discrete and continuous time Markov chains and their applications. Itô type stochastic integral, stochastic differential equations, diffusion processes.

Compulsory/Recommended Readings:

Gihman, I. I., Skorohod, A. D.: *Introduction to the Theory of Random Processes*. W. B. Saunders Co., Philadelphia, Pa.-London-Toronto, Ont. 1969.

Karlin, S., Taylor, H. M.: *A First Course in Stochastic Processes*. Academic Press, New York-London 1966.

Karatzas, I., Shreve, S. E.: *Brownian Motion and Stochastic Calculus*, Springer-Verlag, Berlin, Heidelberg, New York, 1991.

Arnold, L.: *Stochastic Differential Equations: Theory and Applications*. Wiley-Interscience [John Wiley & Sons], New York-London-Sydney, 1974.

Pap, Gyula: Stochastic processes, <http://www.inf.unideb.hu/valseg/dolgozok/papgy/okt.html>

Subject: Theory of Algorithms

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Applied Graph Theory

Lecturers: Ákos Pintér, PhD; Szabolcs Tengely, PhD

Topics: Ordering and choice, heap, Fibonacci heap. Dynamic programming. Graph algorithms: breadth-first search and depth-first search, spanning trees, shortest paths, Dijkstra's algorithm, Bellman-Ford algorithm, Floyd method for the searching of the shortest path. Streams, maximal streams, minimal cut, Ford-Fulkerson algorithm, Edmonds-Karp and Dinic algorithms. Search tree, amortized cost, string search. Huffman code, Lempel-Ziv-Welch compression method

Compulsory/Recommended Readings:

Cormen, Thomas H., Leiserson, Charles E., Rivest Ronald L.: *Új Algoritmusok*, Scolar Kiadó, Budapest 2003.

Lovász L. és Gács P., *Algoritmusok*, Műszaki Könyvkiadó, Budapest, 1978.

Rónyai L., Ivanyos G., Szabó R.: Algoritmusok, Typotex, Budapest, 1998.
Wilf Herbert S., Algorithms and Complexity (Electronic edition, 1994)

Subject: Data Mining

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Theory of Algorithms

Lecturer: Márton Ispány, PhD

Topics: Searching frequent itemset. Association rules. Correlation analysis. Classification. Decision trees, neural networks, k-NN, Bayesian networks. Kernel method, support vector machines. Dimension reduction. Spectral methods. Imprint based similarity. Clustering. Divisive methods. Hierarchical methods. Density and link based methods. Spectral-clustering. Applications and implementation.

Compulsory/Recommended Readings:

Berry, M. J. A., Linoff G., Data Mining Technique. For Marketing, Sales and Customer Support, Wiley, New York, 1997.

Devroye, L., Györfi, L., Lugosi, G., A Probabilistic Theory of Pattern Recognition, Springer, Berlin, 1996.

Hastie, T., Tibshirani, R., Friedman, J., The Elements of Statistical Learning. Data Mining, Inference, and Prediction, Springer, New York, 2001.

Subject: The Mathematics of WWW and Networks

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Applied Graph Theory

Lecturers: Gábor Fazekas, PhD; Sándor Baran, PhD

Topics: Web browsers. Markov chains and random walks on graphs. Theory of search engines. Page Rank and applications. HITS models. Singular decomposition, graph clustering. Graph models (Barabasi). Kleinberg's small-world model. Web page caching, database refreshing. Synchronization and parallelism. Distributed systems and computation.

Compulsory/Recommended Readings:

William Stallings: Data and computer communications (4. ed.), Macmillan Publ. Comp. New York, 1994.

A.S. Tannenbaum: Computer Networks, Fourth Edition, Prentice Hall, Upper Saddle River, 2003.

A.S. Tannenbaum, M.van Steen: Distributed systems: principles and paradigms, Prentice Hall, Upper Saddle River, 2004.

Iványi Antal: Párhuzamos algoritmusok, ELTE Eötvös Kiadó, Budapest, 2005.

Informatikai algoritmusok 1, Szerk.: Iványi Antal, ELTE Eötvös Kiadó, Budapest, 2005.

N.A. Lynch: Osztott algoritmusok, Kiskapu Kft. Budapest, 2002.

Benkő Tamás, Lukácsy Gergely, Szeredi Péter: A szemantikus világháló elmélete és gyakorlata, Typotex, Budapest, 2005.

Subject: Complexity Theory

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Theory of Algorithms

Lecturers: Pál Dömösi, DSc; Benedek Nagy, PhD

Topics: Computing models, algorithms and lower bounds for usage of resources. Communication games. Finite automata, formal languages. Turing-machines: space and time complexity. Random complexity classes. Pseudo random generators. The polynomial hierarchy. The class PSPACE. PSPACE-completeness. Interactive protocols. Shamir's theorem: $IP=PSPACE$. Approximation of hard problems. Boole-networks. Parallel algorithms for arithmetic problems, sorting, graphs and linear algebra. Kolmogorov complexity.

Compulsory/Recommended Readings:

Lovász László: Algoritmuskönyvtára, egyetemi jegyzet, ELTE, Budapest, 1992.
Papadimitrou, Christos H.: Computational complexity, Addison-Wesley, 1995.
Révész, György: Introduction to Formal Languages, McGraw-Hill, New York, 1983.
Rónyai Lajos, Ivanyos Gábor és Szabó Réka, Algoritmuskönyvtára, Typotex, 1998.

Subject: Design, Analysis and Implementation of Algorithms and Data Structures

Classes/week: 3 hour lecture, 3 hour seminar

ECTS Credit Points: 7

Prerequisites: Theory of Algorithms

Lecturers: Attila Pethó, DSc; Attila Bérczes, PhD

Topics: Searching in ordered sets. Sorting. Quicksort. Lower bound for the complexity of sorting. Hashing and sequential searching. The 2-SAT problem. Decomposition of graphs into threes. Gomory-Hu-threes and their applications. The Steiner-tree and the traveling salesman problem. Flows, max flow-min cut theorem. Matching in bipartite graphs. Fast Fourier transformation and its applications. The disjoint union-whereis data structure. Balanced and self-balancing threes. Dynamical threes. Geometrical data structures: hierarchical searching threes, interval-threes and pile threes.

Compulsory/Recommended Readings:

D.E. Knuth, The art of computer programming, Vol. 3. Sorting and searching
A.V. Aho, J.E. Hopcroft and J.D. Ullman, Data structures and algorithms, Addison Wesley, Reading Mass., 1983.
Jungnickel, Dieter Graphs, networks and algorithms, Algorithms and Computation in Mathematics, 5. Springer-Verlag, Berlin, 2005.
Rónyai Lajos, Ivanyos Gábor és Szabó Réka, Algoritmuskönyvtára, Typotex, 1998.

Subject: Cryptography and Data Security

Classes/week: 3 hour lecture, 3 hour seminar

ECTS Credit Points: 7

Prerequisites: None

Lecturers: Attila Bérczes, PhD; Gábor Nyul, PhD

Topics: Basics of data security. Analysis of classical cryptosystems. Symmetric cryptosystems. Block and stream ciphers. Public key cryptography. The RSA algorithm. The Diffie-Hellman key exchange protocol. Digital signatures. Attacks on the RSA. The Rabin cryptosystem, the ElGamal cryptosystem. Elliptic curve cryptography. Cryptographical protocols. Sharing secrets, Zero-knowledge proofs, remote coin-flip. Data protection systems, international and Hungarian patents and projects. Generating pseudo-random numbers.

Compulsory/Recommended Readings:

Ködmön József: Kriptográfia, Computerbooks, Budapest, 1999.
J. Buchmann: Einführung in die Kryptographie, Springer, 1999.
N. Koblitz: A Course in Number Theory and Cryptography, Springer, 1987.
A. Menezes, P. van Oorschot, and S. Vanstone, Handbook of Applied Cryptography, by CRC Press, 1996.

Subject: Theory of Information, Coding and Symmetric Structures

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Attila Pethó, DSc; Tamás Herendi, PhD

Topics: Entropy, conditional entropy. Mutual information. Maximum of the entropy, Fano-inequality. Entropy of data sources. Lossless source coding. Source coding with prescribed error probability. Voice and image compression. Channel coding, capacity, theorem of Shannon. Error correcting codes, important examples. Bounds for the parameters of codes. Perfect codes and block systems. The Golay-codes. t-systems, the inequality of Fisher and its variants. Latin squares.

Compulsory/Recommended Readings:

Ash, Robert: Information theory. Interscience Tracts in Pure and Applied Mathematics, No. 19 Interscience Publishers John Wiley & Sons, New York-London-Sydney, 1965.

Csiszár, Imre; Körner, János: Information theory. Coding theorems for discrete memoryless systems. Probability and Mathematical Statistics, Academic Press, Inc. [Harcourt Brace Jovanovich, Publishers], New York-London, 1981.

Reza, Fazlollah M.: An introduction to information theory, McGraw-Hill Electrical and Electronic Engineering Series McGraw-Hill Book Co., Inc., New York-Toronto-London, 1961.

Györfi László, Györi Sándor, Vajda István, Információ és kódelmélet, Typotex Kiadó, 2000.

Subject: Applied Combinatorics

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Lajos Hajdu, PhD; Sándor Turjányi, dr. univ.

Topics: Enumerative combinatorics, random methods, extremal combinatorics, combinatorial optimization and its applications.

Compulsory/Recommended Readings:

Bollobás, Béla, Combinatorics. Set systems, hypergraphs, families of vectors and combinatorial probability. Cambridge etc.: Cambridge University Press. XII, 177 p. (1986).

Bóna, Miklós, Combinatorics of permutations. [B] Discrete Mathematics and its Applications. Boca Raton, FL: Chapman & Hall/CRC. 383 p. (2004). [ISBN 1-58488-434-7/hbk]

Hajnal Péter, Összeszámlálási problémák., Polygon , Szeged, 1997.

Lawler, Eugene L., Kombinatorikus optimalizálás: hálózatok és matroidok, Műszaki Könyvkiadó, Budapest 1982.

Wilf, Herbert S. Generatingfunctionology. 3rd ed. [B] Wellesley, MA: A K Peters. x, 245 p. (2006). [ISBN 1-56881-279-5/hbk]

Subject: Artificial Intelligence

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Magda Várterész, PhD; Márk Kósa

Topics: Artificial intelligence methods and techniques. Problem representations, state-space representation, examples. State-space graph, graph-search procedures: depth-first, breadth-first. Backtracking, optimal search strategies, heuristics. A and A* algorithms, completeness, monotone restriction. Constructive search algorithms. Local search algorithms: simulated annealing, tabu search,

Hungarian method. Developed search algorithms. Problem-reduction representation and AND/OR graphs. Search procedures for AND/OR graphs, algorithm AO. Two-person, perfect-information games, game trees, winning strategy. Mini-max procedure, alpha-beta pruning procedure. Automated theorem proving and logical programming. Normal forms, prenex form, skolemization. Herbrand's theorem. Substitution, unification. The most general unifiers, unification algorithms. Hilbert systems, natural deduction. The sequent calculus, cut elimination. Semantic tableaux. Resolution, important resolution strategies. Horn-clauses and Prolog..

Compulsory/Recommended Readings:

N. Nilsson, Artificial Intelligence, A New Synthesis, The Morgan Kaufmann Series in Artificial Intelligence, 1998.
S. J. Russel, P. Norvig, Artificial Intelligence, A Modern Approach, Prentice- Hall, 1995.
M. Fitting: First-Order Logic and Automated Theorem Proving, Springer, 2nd edition, 1996.
S. K. Das: Deductive databases and logic programming, Addison Wesley, 1992.
U. Nilsson, J. Maluszynski, *Logic, Programming and Prolog*, 2nd edition, Wiley and Sons, 2000.

Subject: Game Theory

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: Applied Analysis

Lecturer: Attila Gilányi, PhD

Topics: The subject of game theory. Game theoretical models, games in extensive, normal and characteristic function form. Finite games. Fixed point theorems and graph theoretical results applied in game theory. General properties of non-cooperative games. Equilibrium points, the concept of Nash equilibrium, its existence and uniqueness. Two person zero-sum games, matrix games. Basic properties of cooperative games.

Compulsory/Recommended Readings:

K. C. Border, Fixed Point Theorems with Applications to Economics and Game Theory, Cambridge University Press, 1999.
F. Forgó, J. Szép, F. Szidarovszky, Introduction to the Theory of Games, Kluwer Academic Publishers, Dordrecht, Boston, London, 1999.
J. von Neumann, O. Morgenstern, Theory of Games and Economic Behavior, Princeton University Press, Princeton, 1944.
M. J. Osborne, An Introduction to Game Theory, Oxford University Press, New York, 2004.

Subject: Computational Number Theory, Computer Algebraic Program Packages

Classes/week: 4 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Attila Bérczes, PhD; Csaba Rakaczki, PhD

Topics: An overview of the most important mathematical program packages. Fundamental programming tools in MAGMA, PARI and MAPLE (data structure, conditional statements, iterative statements, recursion, functions, procedures). Representation of basic algebraic structures. Defining and handling curves in the different packages, searching for integral point on curves. Solutions of various types of diophantine equations with the help of program packages.

Compulsory/Recommended Readings:

J. Canon – W. Bosma: Handbook of MAGMA, elektronikusan elérhető segédanyag.
J. Canon -- C. Playoust: An Introduction to Algebraic Programming with MAGMA, elektronikusan elérhető segédanyag.
C. Batut, K. Belabas, D. Bernardi, H. Cohen, M. Olivier -- User's Guide to PARI / GP (version 2.3.1) , elektronikusan elérhető segédanyag.

A: Heck -- Introduction to Maple. Third edition. Springer-Verlag, New York, 2003.

Subject: Analysis with Computer

Classes/week: 3 hour seminar

ECTS Credit Points: 3

Prerequisites: None

Lecturer: Attila Gilányi, PhD

Topics: Solving problems in analysis with computer, determining limits, derivatives, integrals. Exact and numeric solution of differential equations. Conditional optimization.

Displaying functions of one variable and functions of several variables and investigating their properties. Expansion of functions into series, interpolation. Exact and numeric solution of nonlinear equations and systems of equations.

Compulsory/Recommended Readings:

Maple 9, Learning Guide, Waterloo Maple Inc. 2003.

M. B. Monagan, K. O. Geddes, K. M. Heal, G. Labahn, S. M. Vorkoetter, J. McCarron, P. De Marco, Maple 9, Advanced Programming Guide, Waterloo Maple Inc. 2003.

Subject: Computer-aided Differential Geometry

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturer: Zoltán Muzsnay, PhD

Topics: Differential geometry of curves. Computation and visualization of the basic quantities (torsion, curvature) with computer algebra systems. Elements of the theory of surfaces. The investigation of special curves, surfaces, geodesics and curvatures. Elements of the calculus of variations and some geometric problems in physics with Maple.

Compulsory/Recommended Readings:

Gray, S. Salamon, E. Abbena: Modern Differential Geometry of Curves and Surfaces with Mathematica. Studies in Advanced Mathematics 47, Chapman & Hall/CRC, Boca Raton, FL, 2006.

J. Oprea Differential Geometry and its Applications, Prentice Hall, 2004.

A. Heck – Introduction to Maple. Third edition. Springer-Verlag, New York, 2003.

Subject: First-Order Logic

Classes/week: 3 hour lecture

ECTS Credit Points: 4

Prerequisites: None

Lecturer: Ágota Figula, PhD

Topics: First-Order Language of mathematical logic. Syntax of first-order languages, semantics of first-order languages. The connection between the syntactic and semantics concepts: satisfaction, completeness. Theorems of Godel. Formal methods: the axioms of arithmetic and set theory.

Compulsory/Recommended Readings:

Ebbinghaus, H.-D., Flum, J., Thomas, W.: Mathematical Logic, Undergraduate Texts in Mathematics, Springer, 1996.

Andras Hajnal, Laszlo Csirmaz: Mathematical Logic, ELTE, Budapest, 1994 in Hungarian.

Albert Dragalin, Szvetlana Buzasi: Introduction in Mathematical Logic, Kossuth Egyetemi Kiad, Debrecen, 2002 in Hungarian.

Subject: Finite Geometries

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Péter T. Nagy, DSc; Ágota Figula, PhD

Topics: Incidence structures. Finite affine and projective geometries. Cyclic planes. Block designs, constructions, existence theorems. Steiner systems. Möbius planes. Quadratic sets, ovals and hyperovals.

Compulsory/Recommended Readings:

Hughes – Piper: Projective planes, Graduate Texts in Mathematics, Vol. 6. Springer-Verlag, New York-Berlin, 1973.

Hughes – Piper: Design theory, Cambridge University Press, Cambridge, 1988.

Dembowski: Finite geometries. Classics in Mathematics. Springer-Verlag, Berlin, 1997.

Subject: Quasigroups and Combinatorial Structures

Classes/week: 2 hour lecture, 2 hour seminar

ECTS Credit Points: 5

Prerequisites: None

Lecturers: Péter T. Nagy, DSc; Ágota Figula, PhD

Topics: Loops, quasigroups, latin squares. Examples and constructions. Nets, orthogonality of quasigroups. Centrality properties. Commutative Moufang loops. Distributive quasigroups. Related combinatorial structures.

Compulsory/Recommended Readings:

Dénes – Keedwell: Latin Squares and their Applications, English Universities Press, 1974.

Quasigroups and Loops: Theory and Applications. Edited by Chein, Pflugfelder and Smith. Sigma Series in Pure Mathematics, 8., Heldermann Verlag, Berlin, 1990.

Pflugfelder: Quasigroups and Loops: Introduction. Sigma Series in Pure Mathematics, 7. Heldermann Verlag, Berlin, 1990.

Subject: Lattice Theory

Classes/week: 2 hour lecture

ECTS Credit Points: 3

Prerequisites: None

Lecturers: Lajos Hajdu, PhD; Csaba Rakaczki, PhD

Topics: Basic concepts, unimodular transformations, lattice determinant, polar lattice. Lattices and quadratic forms. Convex sets, the theorem of Minkowski, successive minima. Algorithms and applications.

Compulsory/Recommended Readings:

J. W. S. Cassels: An Introduction to the Geometry of Numbers, Springer, 1959.

P. M. Gruber, C. G. Lekkerkerker: Geometry of Numbers, North-Holland Publishing Co., 1987.

H. Cohen: A Course in Computational Algebraic Number Theory, Springer, 1995.

Freud R., Gyarmati E.: Számelmélet, Nemzeti Tankönyvkiadó, 2000.

Subject: Discrete Tomography

Classes/week: 2 hour lecture
ECTS Credit Points: 3
Prerequisites: None
Lecturer: Lajos Hajdu, PhD

Topics: Theoretical problems of discrete tomography. The question of unique reconstruction in the classical case and in case of absorption. The structure of classes of tomographical equivalent sets. Convex- and HV-convex sets. Algorithms and complexity problems.

Compulsory/Recommended Readings:

Discrete Tomography, International Journal of Imaging Systems and Technology 9, No. 2/3, Special Issue, (G. T. Herman and A. Kuba, eds.), 1998.

G. T. Herman and A. Kuba, Discrete Tomography: Foundations, Algorithms and Applications, Birkhäuser, Boston, 1999.

Linear Algebra and its Applications 339, Special issue on Discrete Tomography (A. Del Lungo, P. Gronchi and G. T. Herman, eds.), 2001.

Subject: Iterative Fixed Point Theory and its Applications

Classes/week: 2 hour lecture
ECTS Credit Points: 3
Prerequisites: None
Lecturer: Mihály Bessenyei, PhD

Topics: The fixed point theorem of Banach and its generalizations, iterative fixed point theorems. The stability of the fixed point and its continuous dependence. Ekeland's variational principle and the fixed point theorem of Caristi. Tarski's fixed point theorem for partially ordered sets. Interpretations of existence and uniqueness problems as fixed point theorems: Inverse and implicit function theorems; open mapping theorem. Existence and uniqueness theorems for differential equations. Solving nonlinear system of equations. Fractal theory.

Compulsory/Recommended Readings:

E. Zeidler, Nonlinear Functional Analysis and its Applications I-IV, Springer, 1986.

Granas—J. Dugundji, Fixed Point Theory, Springer, 2003.

V. Berinde, Iterative Approximation of Fixed Points, Eferide, 2002.

Subject: Extremum Problems

Classes/week: 2 hour lecture, 1 hour seminar
ECTS Credit Points: 4
Prerequisites: None
Lecturer: Zsolt Páles, DSc

Topics: Classical and modern extremum problems. Fermat's principle. Descent, admissible, and tangent directions and variations in constrained extremum problems and their determination. Tangent space of nonlinear manifolds. The necessary conditions of Dubovitskii and Milyutin for the extremum in primal form. The dual form of the necessary conditions: first- and second-order Lagrange principle. Sufficient conditions of the optimality.

Compulsory/Recommended Readings:

A. D. Ioffe---V. M. Tihomirov, Theory of Extremal Problems, North-Holland, 1979.

I. V. Girsanov, Mathematical Theory of Extremum Problems, Moskva, 1970.

Kósa A., Optimumszámítási modellek (Models of optimization problems), Műszaki Könyvkiadó, 1979.

Szándéknyilatkozat

Alulírott Prof.Dr. Nagy János rektor nyilatkozom, hogy az alkalmazott matematikus mesterképzési szak angol nyelvű indítására benyújtott kiegészítő kérelemben megnevezett további oktatóknak a jelzett módon való foglalkoztatását biztosítom a felsőoktatási intézményben az indítandó képzés egy teljes ciklusára, és gondoskodom a személyi feltételekben bemutatott szakmai megfelelőségének fenntartásáról.

Debrecen, 2007. május 5.

Prof.Dr. Nagy János
rektor, egyetemi tanár

Az oktatók személyi-szakmai adatai

Szakfelelős
Teljes munkaidőben
foglalkoztatott oktatók:

Dr. Nagy Péter
Dr. Baran Sándor
Dr. Barczy Mátyás
Dr. Bérczes Attila
Dr. Bessenyei Mihály
Dr. Boros Zoltán
Dr. Dömösi Pál
Dr. Fazekas Gábor
Dr. Fazekas István
Dr. Figula Ágota
Dr. Gaál István
Gáll József
Dr. Gilányi Attila
Dr. Hajdu Lajos
Dr. Herendi Tamás
Iglói Endre
Dr. Ispány Márton
Kósa Márk
Dr. Kozma László
Dr. Lakatos Piroska
Dr. Lovas Rezső László
Dr. Molnár Lajos
Dr. Muzsnay Zoltán
Dr. Nagy Benedek
Nyul Gábor
Dr. Páles Zsolt
Dr. Pap Gyula
Dr. Pethő Attila
Dr. Pink István
Dr. Pintér Ákos
Dr. Rakaczki Csaba
Dr. Székelyhidi László
Dr. Tengely Szabolcs
Dr. Turjányi Sándor
Dr. Várterész Magda
Dr. Vincze Csaba

Nem teljes
munkaidőben
foglalkoztatott oktatók:

Name: Péter Tibor Nagy
Year of birth: 1946
University/College Degrees: MSc (Attila József University, Szeged, 1969)
Qualifications: Mathematics and Computer Science
Language competence: English, German, Russian
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, Professor, Director of Institute
Academic degree: DSc
Science/Arts Academy fellowship:
Honours: Széchenyi Professorship (1997-2001)
Education activity up to now: (lectures/seminars taught, time spent with teaching); Lectures at Szeged, Debrecen, Erlangen, Toulouse Universities on undergraduate, graduate or postgraduate level: Analytical and Differential Geometry, Mathematical Logic and Set Theory, Linear Algebra, Topological and Lie Groups, Finite Geometry, Descriptive Geometry, Combinatorics, Non-associative Algebra, Symmetric Manifolds Time spent with teaching: 37 years
Presentation of work experience and achievements: Teaching activity on university level since 1969, associate university professor from 1979 until 2003, head of Department of Geometry at Attila József University, Szeged, from 1981 until 1994, at Debrecen University from 1994 until 2006, director of Institute of Mathematics from 2003. Author of a textbook on Differential Geometry which is used in different Hungarian universities. Head of the PhD program Geometry and Combinatorics at Szeged University 1992-94, of the program Differential Geometry and its Applications at Debrecen University from 2000. Doctor of Hungarian Academy of Science: 2003, full professor: from 2004. Supervision of 5 PhD theses. Giving PhD courses at different European universities (Montpellier, Toulouse, Ghent, Giessen, Erlangen, Palermo, Valencia). To be the head of a research group developing mathematical models for the Ministry of Industry in the years 1984-88.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Loops in Group Theory and Lie Theory, Expositions in Mathematics 35, Walter de Gruyter, Berlin-New York, 2002, pp. ii+361, (with K. Strambach). 2. Submersions on nilmanifolds and their geodesics, Publ. Math. Debrecen, 62 (2003), 415-428, (with Homolya Sz.). 3. Geodesics on the unit tangent bundle, Proc. Royal Soc. Edinburgh, 133 (2003), 1209--1229. (withk J. Berndt, E. Boeckx and L. Vanhecke). 4. Invariant Shen connection and geodesic orbit spaces, Periodica Mathematica Hungarica, 51, (2005), 37-51, (with Muzsnay Z.). 5. Normal form of 1-dimensional differentiable loops, Acta Sci. Math., Szeged, 72, (2006), 863-873.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. Extension of local loop isomorphisms, *Monatsh. Math. Wien* **112** (1991) 221-225.
2. On collineation groups generated by Bol reflections, *Journal of Geometry* **48** (1993) 63-78, (with M. Funk).
3. Loops as invariant sections in groups and their geometry, *Canadian Journ. Math.* **46** (1994) 1027-1056, (with K. Strambach).
4. Loops in Group Theory and Lie Theory, *Expositions in Mathematics* 35, Walter de Gruyter, Berlin-New York, 2002, pp. ii+361, (with K. Strambach).
5. Normal form of 1-dimensional differentiable loops, *Acta Sci. Math., Szeged*, 72, (2006), 863-873.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity

- Head of Department of Geometry 1981-2006 (Szeged University until 1994, Debrecen University from 1994).
- Vice-director of Bolyai Institute of Szeged University: 1993-94,
- Vice-director of Institute of Mathematics of Debrecen University: 1999-2000 and 2001-2003,
- Director of Institute of Mathematics of Debrecen University from 2003,
- Head of the PhD-program Differential Geometry and its Applications in the PhD School Mathematics and Computer Science at Debrecen University from 2000,
- Member of the Board of Mathematics and Computer Science of the Hungarian Accreditation Committee: 2001-2006,
- Editor of *Acta Scientiarum Mathematicarum*: 1978-1998,
- Editor of *Publicationes Mathematicae* from 1996,
- Editor of *Acta Universitatis Palackianae Olomouensis Mathematica* from 1998,
- Editor of *Carpathian Journal of Mathematics* from 2002,
- Editor of *Oriental Journal of Mathematics* from 2005.

International collaborations

- Member of the organization committee of international mathematical conferences.
- International coordinator of a TEMPUS project (1993-94).
- Coordinator of Hungarian-Italian and Hungarian-German research projects (1997-99, 1999-2001, 2005-07).
- Visiting professorship in Erlangen, Potenza, Montpellier, Toulouse, etc.

Collaboration with prof. Karl Strambach (Erlangen University), joint publication of the monograph *Loops in Group Theory and Lie Theory*, *Expositions in Mathematics* 35, Walter de Gruyter, Berlin-New York, 2002, pp. ii+361, (with K. Strambach).

Name: Sándor Baran
Year of birth: 1973
University/College Degrees: Kossuth Lajos University, Debrecen (1995, 1996).
Qualifications: Mathematics; Teacher of mathematics; English-Hungarian technical translator of mathematics
Language competence: English (advanced), Russian (advanced), Italian (beginner)
Current place of employment, position indicated in the posting: University of Debrecen, associate professor
Academic degree: PhD, dr. habil.
Science/Arts Academy fellowship:
Honours: Award of the Faculty of Informatics (2006); Farkas Gyula Prize (János Bolyai Mathematical Society, 2004); Bolyai Grant of the Hungarian Academy of Sciences (2001-2004); Grünwald Géza Prize (János Bolyai Mathematical Society, 1999).
Education activity up to now: (lectures/seminars taught, time spent with teaching); Computer statistics I, II lt., 2002- ; Control systems I, II lt.+sem., 2000- ; Probability theory and statistics lt., 2001, sem. 1999- , Statistics econ. I, II sem., 1999 - , Mathematics III econ. sem., 1999-2006 , Numerical analysis sem. 1995-2000, Operations research sem. 1995-2000, Differential equations sem. 1993-1994.
Presentation of work experience and achievements: 17 papers in referred journals, 1 submitted; 5 papers in referred conference proceedings; 4 invited, 17 contributed talks and 1 poster on international conferences; co-author of a university lecture note; 26 independent citations.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Baran, S., Pap, G., Zuijlen, M. v., Asymptotic inference for unit roots in spatial triangular autoregression. <i>Acta Appl. Math.</i> (2007), to appear. 2. Csukás, A., Takai, S., Baran, S., Adolescent growth in main somatometric traits of Japanese boys: Ogi Longitudinal Growth Study. <i>HOMO</i> 57 (2006), no. 1, 73-86. 3. Baran, S., A consistent estimator for nonlinear regression models. <i>Metrika</i> 62 (2005), no. 1, 1-15. 4. Baran, S., Pap, G., Zuijlen, M. v., Asymptotic inference for an unstable spatial AR model. <i>Statistics</i> 38 (2004), no. 6, 465-483. 5. Baran, S., A consistent estimator for linear models with dependent observations. <i>Comm. Statist. Theory Methods</i> 33 (2004), no. 10, 2469-2486.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Baran, S., Pap, G., Zuijlen, M. v., Asymptotic inference for unit roots in spatial triangular autoregression. <i>Acta Appl. Math.</i> (2007), to appear. 2. Baran, S., Pap, G., Zuijlen, M. v., Estimation of the mean of stationary and nonstationary Ornstein-Uhlenbeck processes and sheets. <i>Comput. Math. Appl.</i> 45 (2003), no. 4-5, 563-579. 3. Norberg, T., Rosén, L., Baran, Á. and Baran, S., On modelling discrete geological structures as Markov random fields. <i>Math. Geol.</i> 34 (2002), no. 1, 63-77. 4. Baran, S., A consistent estimator in general functional errors-in-variables models. <i>Metrika</i> 51

(2000), no. 2, 117-132.

5. Fazekas, I., Baran, S., Kukush, A., Lauridsen, J., Asymptotic properties in space and time of an estimator in non-linear functional errors-in-variables models. *Random Oper. Stochastic Equations* 7 (1999), no. 4, 389-412.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Secretary of the Organizing Committee of the XXVI. International Seminar on Stability Problems for Stochastic Models (Sovata-Bai, Romania, August 27 -- September 2, 2006).
- Secretary of the Organizing Committee of the Hungarian – Croatian Workshop on Mathematics and Computer Science (Debrecen, Hungary, October 6 -- 8, 2005).
- Secretary of the Schweitzer Miklós Mathematical Competition, 2001.
- Secretary of the Organizing Committee of the XXI. International Seminar on Stability Problems for Stochastic Models (Eger, Hungary, January 28 -- February 3, 2001).

International collaborations:

- Edit Gombay, University of Alberta, Edmonton, Canada.
- Martien C. A. van Zuijlen, Radboud University Nijmegen, Nijmegen, The Netherlands.
- Alexander Kukush, Kiev University, Kiev, Ukraine.
- Tommy Norberg, Chalmers Technical University, Göteborg, Sweden.

Name: Mátyás Barczy
Year of birth: 1977
University/College Degrees: university
Qualifications: mathematician
Language competence: intermediate English language certificate, 2001
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Informatics, Department of Applied Mathematics and Probability, 4032 Debrecen, Egyetem square 1, junior lecturer
Academic degree: Doctor of Philosophy (Ph.D.) in Mathematics and Computer Sciences
Science/Arts Academy fellowship: -
Honours: -
<p>Education activity up to now: (lectures/seminars taught, time spent with teaching);</p> <p>M1502 Probability Theory 1, Seminar, M2506 Probability Theory 2, Seminar, M2508 Stochastic Processes, Seminar, M1503 Statistics 1, Seminar, M3531 Financial Mathematics 1, Seminar, M3532 Financial Mathematics 2, Seminar, M3524 Actuarial Mathematics 1, Lecture M1745 Probability Theory and Mathematical Statistics, Seminar, M1725 Discrete Mathematics 2, Seminar, KT10013 Mathematics III, Seminar (for economists).</p> <p>Time spent with teaching: 3 years</p>
<p>Presentation of work experience and achievements:</p> <p>Kató Rényi prize awarded by the János Bolyai Mathematical Society (Hungary), 2001.</p>
<p>Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught)</p> <ol style="list-style-type: none"> M. Barczy and G. Pap: <i>Gaussian measures on the affine group: uniqueness of embedding and supports</i>, Publ. Math. Debrecen. 63(1-2) (2003), 221-234. M. Barczy, G. Pap: <i>Connection between deriving bridges and radial parts from multidimensional Ornstein-Uhlenbeck processes</i>, Periodica Mathematica Hungarica, 50 (1-2) (2005), 47-60. M. Barczy and G. Pap: <i>Fourier transform of a Gaussian measure on the Heisenberg group</i>, Annales de L'Institut Henri Poincare Probabilites et Statistiques, 42, Issue 5 (2006), 607-633. M. Barczy and G. Pap: <i>Portmanteau theorem for unbounded measures</i>,

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. **L. Molnár and M. Barczy:** *Linear maps on the space of all bounded observables preserving maximal deviation*, **Journal of Functional Analysis**, **205 (2003), 380-400.**
2. **M. Barczy, G. Pap:** *Probability Theory 2 Problems (in Hungarian)*, (167 pages).
3. **M. Barczy, G. Pap:** *Stochastic Processes Problems, Part I (in Hungarian)*, (157 pages)
4. **M. Barczy, G. Pap:** *Stochastic Processes Problems, Part II (Discrete time Markov chains) (in Hungarian)*, (173 pages).
5. **M. Barczy:** *Financial Mathematics 1 Problems (in Hungarian)*, (144 pages).

The above lecture notes can be downloaded from the webpage

http://www.inf.unideb.hu/valseg/dolgozok/barczy/oktatas_barczy.html

Scientific/professional public activity, international collaborations:

Scientific/professional public activity: -

International collaborations: -

Name: Attila Bérczes
Year of birth: 1972
University/College Degrees: university degree
Qualifications: mathematician, teacher of mathematics, English-Hungarian math translator
Language competence: Hungarian, English, Italian, Romanian, German
Current place of employment, position indicated in the posting: University of Debrecen, assistant professor
Academic degree: PhD
Science/Arts Academy fellowship:
Honours: Grünwald Géza Prize, Rényi Kató Prize, Rector's Award
Education activity up to now: (lectures/seminars taught, time spent with teaching); Fundamentals of algebra, Algebra and Number Theory, Abstract Algebra I, II, Number Theory, Combinatorics, Linear Algebra I,II, Calculus I,II, Discrete mathematics I, II, Mathematics I, II (for students in economics), Probability theory, Magma, Cryptography. Time spent with teaching: 13 years
Presentation of work experience and achievements: 14 publications in refereed journals and proceedings 19 talks in international conferences.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Bérczes A, Győry K. On the number of solutions of decomposable polynomial equations. Acta Arith, 2002; 101:171-187. 2. Bérczes A, Ködmön J, Pethő A. A one-way function based on norm form equations, Periodica Math Hungar, 2004; 49: 1-13. 3. Bérczes A, Evertse J-H, Győry K. On the number of equivalence classes of binary forms of given degree and given discriminant, Acta Arith. 2004; 113: 363-399. 4. Bérczes A, Pethő A, Ziegler V. Parameterized Norm Form Equations with Arithmetic progressions, Journal of Symbolic Computations, 2006; 41: 790-810. 5. Bérczes A, Evertse J-H, Győry K., On the number of pairs of binary forms with given degree and given resultant, Acta Arith., accepted for publication.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: <ul style="list-style-type: none"> • I have been the secretary of the organizing committee of 5 conferences • I am a reviewer of the Mathematical Reviews • I am member of the János Bolyai Mathematical Society

International collaborations:

- Leiden University, Leiden, Hollandia (Robert Tijdeman, J.-H. Evertse)
- Université Bordeaux 1, Franciaország (H. Cohen, Y. Bilu)

Name: Mihály Bessenyei
Year of birth: 1975
University/College Degrees: Mathematician Ms. C.
Qualifications: –
Language competence: english
Current place of employment, position indicated in the posting: University of Debrecen, assistant
Academic degree: Ph. D.
Science/Arts Academy fellowship: –
Honours: TTK memorial medal, ISFE medal, Grünwald Géza memorial medal
Education activity up to now: (lectures/seminars taught, time spent with teaching); Seminars on Analysis I, Analysis II, Analysis III, Differential equations, Discrete mathematics I, Discrete mathematic II, Base of mathematics I, Base of mathematics II, Geometry III, lectures on Base of mathematics I, Base of mathematics II, Fixed point theory and Analysis II since 1997.
Presentation of work experience and achievements: <i>Referee activity</i> at five journals (Aequationes Math., MIA, JIPAM, Acta Sci. Math. Szeged, Period. Math.); <i>Talks</i> at 20 conferences (18 international ones); <i>Research activity:</i> 6 papers, 1 monograph, 1 paper to appear 1 book chapter to appear; <i>Citations:</i> 18 independent citations on 3 papers.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) [1] M. Bessenyei and Zs. Páles: <i>Higher-order generalizations of Hadamard's inequality</i> , Publ. Math. Debrecen, 61/3-4 (2002), 623-643. [2] M. Bessenyei and Zs. Páles: <i>Hadamard-type inequalities for generalized convex functions</i> , Math. Ineq. Appl., 6/3 (2003), 379-392. [3] M. Bessenyei and Zs. Páles: <i>On generalized higher-order convexity and Hermite-Hadamard-type inequalities</i> , Acta Sci. Math. Szeged 70 (2004), 13-24. [4] M. Bessenyei and Zs. Páles: <i>Hermite-Hadamard inequalities for generalized convex functions</i> , Aequationes Math., 69 (2005), 32-40. [5] M. Bessenyei and Zs. Páles: <i>Characterization of convexity via Hadamard's inequality</i> , Math. Inequal. Appl., 9/1 (2006), 53-62.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) [1] M. Bessenyei: <i>Hermite-Hadamard-type inequalities for generalized convex functions</i> , Ph.D. dissertation 2005, RGMIA monographs (http://rgmia.vu.edu.au/monographs/index.html) [2] M. Bessenyei: <i>Hadamard's inequality on simplices</i> , The American Math. Monthly (2008), to appear.
Scientific/professional public activity, international collaborations:

Scientific/professional public activity: organizing meetings and conferences

International collaborations: collaboration with polish mathematicians

Name: Zoltán Boros
Year of birth: 1966
University/College Degrees: MSc in Mathematics (Kossuth L. University, Debrecen, 1991)
Qualifications: Mathematician
Language competence: English (advanced level), Russian (intermediate level)
Current place of employment, position indicated in the posting: Associate Professor; University of Debrecen, Faculty of Sciences, Institute of Mathematics, Department of Analysis
Academic degree: PhD, Habilitation
Science/Arts Academy fellowship: Public Corporation of the Hungarian Academy of Sciences
Honours: Rényi Kató Memorial Prize, University Doctor's Degree with Distinction, Medal of the 38 th International Symposium on Functional Equations
Education activity up to now: (lectures/seminars taught, time spent with teaching); <i>Lectures:</i> Differential Equations, Measure and Integration, Real Functions Theory, Complex Analysis, Modern Analysis, Partial Differential Equations, Distributions and Integral Transformations, Functional Equations. <i>Seminars:</i> Analysis I–III, Mathematics 1. <i>Instructional classes:</i> Set Theory and Basic Analysis, Differentiation and Integration, Numerical Analysis. <i>Time spent with teaching:</i> More than 15 years (Instructor from 1988 to 1991, Assistant from 1991 to 1996, Lecturer from 1996 to 2004, Associate Professor from 2004).
Presentation of work experience and achievements: <i>Fields of interest:</i> Functional Equations and Inequalities, Generalized Derivatives. <i>Presentations:</i> 21 papers, 42 talks at Conferences and Work Shops.
Professional, scientific (artistic) work of the past five years: (listing the most important <u>maximum 5</u> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Z. Boros, <i>Strongly Q-differentiable functions</i>, Real Anal. Exchange 27 (1) (2002), 17–25. 2. Z. Boros, <i>Systems of generalized translation equations on a restricted domain</i>, Aequationes Math. 67 (2004), 106–116. 3. Z. Boros and P. Erdei, <i>A conditional equation for additive functions</i>, Aequationes Math. 70 (2005), 309–313. 4. Z. Boros and Zs. Páles, <i>Q-subdifferential of Jensen-convex functions</i>, J. Math. Anal. Appl. 321 (2006), 99–113. 5. Z. Boros and Z. Daróczy, <i>A composite functional equation with additive solutions</i>, Publ. Math. Debrecen 69 (1-2) (2006), 245–253.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Z. Boros, <i>On completely P-additive functions with respect to interval-filling sequences of type P</i>, Acta Math. Hung. 65 (1) (1994), 17–26. 2. Z. Boros, <i>Note on multilinear functions and algebraic dependence</i>, Results Math. 26 (3-4) (1994), 225–228.

3. J. Aczél, Z. Boros, J. Heller, and C. T. Ng, *Functional Equations in Binocular Space Perception*, J. Math. Psych. **43** (1) (1999), 71–101.
4. Z. Boros, *Strongly Q -differentiable functions*, Real Anal. Exchange **27** (1) (2002), 17–25.
5. Z. Boros and Zs. Páles, *Q -subdifferential of Jensen-convex functions*, J. Math. Anal. Appl. **321** (2006), 99–113.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Reviews (Mathematical Reviews, Zentralblatt für Mathematik)
- Referee's reports (Aequationes Mathematicae, Publicationes Mathematicae Debrecen, Real Analysis Exchange, Tatra Mountains Mathematical Publications)
- Scientific Secretary of International Conferences and Seminars (compiling booklets, reports)

International collaborations:

- *Aczél János*, *Che Tat Ng*, Department of Pure Mathematics, University of Waterloo, Canada (1 joint paper)
- *Peter Volkman*, Institut für Analysis, Universität Karlsruhe, Germany (1 joint paper)
- *Roman Ger*, Inst. Mat., Uniwersytet Śląski, Katowice, Poland (organizing joint seminars, compiling reports)

Name: Pál Béla Dömösi
Year of birth: 1943
University/College Degrees : M.Sc.
Qualifications: Dipl. Mathematician
Language competence: English and Russian PhD exam
Current place of employment, position indicated in the posting: Debrecen University, Faculty of Informatics, Head of Department of Computer Science
Academic degree: D.Sc.
Science/Arts Academy fellowship: -
Honours: Distinguished "Széchenyi" Professor Fellowship 2000-2003
Education activity up to now: (lectures/seminars taught, time spent with teaching); 24 years in teaching, Algebra, Compilers, Formal languages and automata
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) 1. Dömösi, Pál; Horváth, Géza Alternative proof of the Lyndon-Schützenberger theorem. Theoret. Comput. Sci. 366 (2006), no. 3, 194--198. 2. Dömösi, Pál; Horváth, Géza The language of primitive words is not regular: two simple proofs. Bull. Eur. Assoc. Theor. Comput. Sci. EATCS No. 87 (2005), 191--197. 3. Dömösi, Pál; Nehaniv, Chrystopher L. Algebraic theory of automata networks. An introduction. SIAM Monographs on Discrete Mathematics and Applications, 11. Society for Industrial and Applied Mathematics (SIAM), Philadelphia, PA, 2005. xii+258 pp. ISBN: 0-89871-569-5 PDF Doc Del Clipboard Journal Article 4. Dömösi, Pál; Martín-Vide, Carlos; Mateescu, Alexandru On polyslender context-free languages. Publ. Math. Debrecen 66 (2005), no. 1-2, 1--15. 68Q45 5. Dömösi, Pál; Martín-Vide, Carlos; Mitrana, Victor Remarks on sublanguages consisting of primitive words of slender regular and context-free languages. Theory is forever, 60--67, Lecture Notes in Comput. Sci., 3113, Springer, Berlin, 2004.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: Memberships: Japan Association of Mathematical Sciences, Japan, American Mathematical Society, U.S.A., European Association for Theoretical Computer Science, EU, John von Neumann Society, Hungary, Bolyai Janos Mathematical Society, Hungary, Honorary Research Board of Advisors, American Biographical Institute, U.S.A.

International collaborations:

1. research grant for 6 months from Dirección General de Universidades, Secretaría de Estado de Educación y Universidades, Ministerio de Educación, Cultura y Deporte (SAB2001-0081), España, 2003
2. EGIDE fellowship for 1 month as a visiting professor at the LIAFA - Paris-7, University, France, 2000
3. Tempus Individual Mobility Grant for 3 months spent as a visiting lecturer at the University of Twente, the Netherlands, 1996
4. DAAD (German NSF) fellowships for 2-2 months as a visiting scientist at the University of Hamburg, Germany, 1999 and 1994
5. invited professorship for 2 months, the University of Turku, Finland, 1998
6. JSPS (Japan Society for Promotion of Science) research fellowships, Kyoto Sangyo University, Japan, 2004-2005 (10 months), 2004 (2 months), 2001 (2 months), 1999 (1 month), 1998 (1 month)
7. Soros Foundation fellowship for 9 months spent as a visiting scientist at the Kyoto Sangyo University, Japan, 1994/95
8. invited professorships, the University of Aizu, Japan, 2001/2002 (6 months), 1997/98 (11 months)

Name: Gábor Fazekas
Year of birth: 1952
University/College Degrees: MSc (in Mathematics)
Qualifications: MSc in Mathematics
Language competence: Hungarian (mother tongue), English (intermediate), German (advanced), Russian (advanced)
Current place of employment, position indicated in the posting: Faculty of Informatics at the University of Debrecen, Associate Professor at the Department of Information Technology
Academic degree: Ph.D.
Science/Arts Academy fellowship: no
Honours: “Higher Education Studies Medal for Merit” from the Ministry of Education, 1977; “Doctor Sub Auspiciis Rei Publicae Popularis” from the Kossuth Lajos University of Debrecen, 1981; “Award for outstanding work” from the Ministry of Education, 1998; “Doctor Honoris Causa” from the University of Oradea (Romania), 2005.
Education activity up to now: (lectures/seminars taught, time spent with teaching); <i>Lectures/seminars taught:</i> Database systems, Digital picture processing, Discrete mathematics, Operating systems, (Assembly) programming languages and computer architectures. <i>Time spent with teaching:</i> 33 years
Presentation of work experience and achievements: <i>Combinatorial coding theory, polynomial metric spaces and applications.</i> While investigating certain parameters of error correcting codes it is useful to consider any particular code as a finite subset of a metric space. The concept of polynomial metric spaces provides a common framework to investigate various combinatorial objects that influence the construction of many interesting codes and their parameters: For instance, the estimation of the cardinality and covering radius of codes and designs can be reduced to the solution of certain extremal problems concerning a system of orthogonal polynomials. Following an idea of Sidelnikov we have obtained some widely cited results. <i>Computer architectures and systems:</i> The machine level programming makes it possible the improvement and correction of some (performance) critical parts of a computer program. We have some results concerning the optimization of long number arithmetic on various hardware platforms including SPARC-9. <i>Digital picture processing:</i> Our results concerning permutational source coding can be applied for secure voice and picture transmission. Another result concerning fingerprint pattern recognition can be applied in authentication systems. <i>Databases:</i> Access of and knowledge discovery in large scale remote databases have become very important challenges. Besides we investigated the modeling of performance issues as well.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) [1.]Fazekas, A., Fazekas, G., <i>Fingerprint identification based on dermatological features</i> , AMAPN (www.emis.de/journals) 18(2002), pp. 85-94, [2.] Fazekas, G., Jónás R., <i>A Scaling and Rotating Invariant Object Matching Algorithm</i> ,

Mathematical and Computer Modelling, 38 (2003), pp.797-801

- [3.] Fazekas G., *An extremum problem for polynomials and bounds for codes with given distance and diameter in polynomial metric spaces*, *Mathematical and Computer Modelling*, 38 (2003), pp.789-795
- [4.] Adamko A., Arató M., Fazekas G., Juhász I., *Performance evaluation of large scale data processing systems*, XXVI. Seminar on Stability Problems for Stochastic Models August 27 - September 2, 2006 Sovata-Bai, Romania
- [5.] Adamko A., Arató M., Fazekas G., Guta G., *Software quality metrics*, XXVI. Seminar on Stability Problems for Stochastic Models August 27 - September 2, 2006 Sovata-Bai, Romania

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

- [1.] Fazekas, G., *On the extreme points of sets of measures defined by moment inequalities*, *Publ. Math., Debrecen*, T. 36., 1989., p. 57-64.
- [2.] Fazekas, G., V.I. Levenshtein *On upper bounds for code distance and covering radius of designs in polynomial metric spaces*, *Proc. of the Fifth Joint Soviet - Swedish Workshop on Information Theory*, Moscow, Jan. 13-19, 1991., p. 65-68.
- [3.] Fazekas, G., *On the coding of digitized pictures*, *Periodica Polytechnica*, T. Eng., 19(1991), p. 41-47.
- [4.] Fazekas, G., Kormos, J., *User Interface -- Certification and Authentication*, *Workflow Management: challenges, paradigms and products*, G. Chroust, A. Benczúr (eds), *Schriftenreihe der österreichischen Computer Gesellschaft*, Bd 76, 1994, p. 169 - 175.
- [5.] Fazekas, G., V.I. Levenshtein, *On upper bounds for code distance and covering radius of designs in polynomial metric spaces*, *Journal of Combinatorial Theory*, Series A, Vol. 70, No. 2, May 1995, p.267-288.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Teaching Mathematics and Computer Science, Debrecen (member of the editorial board, 2002–)
- *Journal for Applied Mathematics (Alkalmazott Matematikai Lapok)*, Budapest (member of the editorial board, 2003–)
- HAS III. Branch, member of the Committee for Informatics and Comp. Sci. (1999–)
- HAS III. Branch, secretary of the Committee for Informatics and Comp. Sci. (2006–)
- Secretary of the Comp. Sci. WG at the Regional Committee of HAS in Debrecen (1990–1996)
- Member of the Board of the John von Neumann Computer Society (1992–1994)
- Member of the Hajdú-Bihar (local) Board of the John von Neumann Computer Society (1992–1994)
- IEEE member (2006-), IEEE Comp. Society member (2001–)
- Vicedirector of the Institute of Mathematics and Informatics at the University of Debrecen (1999–2003)
- Vicedean of the Faculty of Informatics at the University of Debrecen (2004)
- Conference Org. Committees: ICGF'84 Debrecen, ICAI'3, '4, '5 Eger, NFE'03 Noszvaj

International collaborations:

- Univ. Paderborn, Paderborn (K.-H. Indlekofer)
- Keldish Inst., Moszkva (V.I. Levenshtein)
- Inst. of Math., Sofia (P. Boyvalenkov)
- Jyväskylä Polytechnic, Jyväskylä (P. Maranen, T. Aianen)

Name: István Fazekas
Year of birth: 1954
University/College Degrees: university diploma
Qualifications: diploma in mathematics
Language competence: English, Russian
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Informatics, associate professor
Academic degree: PhD, habilitation
Science/Arts Academy fellowship: --
Honours: --
<p>Education activity up to now: (lectures/seminars taught, time spent with teaching);</p> <p>Lectures taught: Probability theory, Statistics, Numerical mathematics, Operational research, Neural networks, Stochastic processes, Multivariate statistics</p> <p>Two lecture notes</p> <p>Time spent with teaching: 28 years</p>
<p>Presentation of work experience and achievements:</p> <p>Research fields: Limit theorems in probability theory: laws of large numbers, limit theorems, functional limit theorems, almost sure limit theorems. Statistical estimators and tests. Regression models, errors-in-variable models, econometric models. Kriging. Asymptotic and small sample properties of estimators.</p> <p>Tutor of PhD theses:</p> <ol style="list-style-type: none"> 1. Baran, Sándor (University of Debrecen): Asymptotic properties of estimators in regression models. PhD theses, University of Debrecen. Accepted at 2001. 2. Tómacs, Tibor (Eszterházy Károly College): Asymptotic results in probability theory. PhD theses, University of Debrecen. Accepted at 2004. <p>Leader of research projects:</p> <ol style="list-style-type: none"> 1. Statistical and computational analysis of temporal and spatial stochastic relationships. FKFP 429/1997, 1997-99. 2. Analysis of regression models. FKFP 0121/1999, 1999-2001. 3. Computational tools for teaching statistics. PFP, 1998-2000. 4. GNU Iterator, the new generation portal software. IHM-K+F 50, 2003-2004. 5. MobiDIAK, the self-organizing mobile portal. OMFB-00373/2003, 2003-2006.
<p>Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught)</p> <ol style="list-style-type: none"> 1. Chuprunov, A. and Fazekas, I. Inequalities and strong laws of large numbers for random allocations. Acta Math. Hung. 109(1-2), 163--182 (2005). 2. Fazekas, I. and Rychlik, Z. Almost sure limit theorems for semi-selfsimilar processes. Probability

- and Mathematical Statistics. 25(2), 241--255 (2005).
3. Fazekas, I. and Kukush, A. G. Kriging and measurement errors. *Discussiones Mathematicae, Probability and Statistics*, 25, 139--159 (2005).
 4. Fazekas, I. and Chuprunov, A. Asymptotic normality of kernel type density estimators for random fields. *Stat. Inference Stoch. Process.* 9(2), 161--178 (2006).
 5. I. Fazekas and P. Filzmoser, A functional central limit theorem for kernel type density estimators. *Austrian Journal of Statistics.* 35(4), 409--415 (2006).

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. Fazekas, I. and Klesov, O. I. A general approach to the strong laws of large numbers. *Theory of Probability Applications*, 45, no.3, 568-583, (2000).
2. Fazekas, István and Kukush, Alexander G. Infill asymptotics inside increasing domains for the least squares estimator in linear models. *Stat. Inference Stoch. Process.* 3, no.3, (2000), 199--223.
3. Fazekas, I. Limit theorems for the empirical distribution function in the spatial case. *Stat. Probab. Letters.* 62, 251--262 (2003).
4. Fazekas, I. and Rychlik Z. Almost sure central limit theorems for random fields. *Math. Nachr.* 259, 12--18 (2003).
5. Fazekas, I., Kukush, A. and Zwanzig, S. Correction of nonlinear orthogonal regression estimator. *Ukrainian Mathematical Journal*, 56, 8, 1101--1118 (2004).

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- University of Debrecen, Department of applied mathematics and probability theory, head (1994-2003).
- Agricultural University of Debrecen, Department mathematics physics and argometeorology, head (1995-1998).
- University of Debrecen, Center of independent faculties, vice president (2004-2006).

International collaborations:

- University of Kazan, Russia (Prof. Alexey Chuprunov),
- University of Kiev, Ukraina (Prof. Alexander Kukush),
- Kiev University of Technology, Ukraina (Prof. Oleg Klesov),
- M. Curie-Sklodowska University, Lublin, Poland (Prof. Zdzislaw Rychlik),
- University of Odense, Danmark, (Prof. J. Lauridsen),
- Vienna University of Technology, Ukraina (Prof. Peter Fizmoser).

Name: Ágota Figula
Year of birth: 1976
University/College Degrees: Mathematics and physics teacher, Kossuth Lajos University, Debrecen, 1999, Mathematician, University of Erlangen-Nuernberg, 1999, recognized University of Debrecen,
Qualifications: Mathematics and physics teacher, Mathematician
Language competence: German superlative, English intermediate
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, assistant lecturer
Academic degree: Ph.D.
Science/Arts Academy fellowship: Member of János Bolyai Mathematical Society, Member of Deutsche Mathematiker Vereinigung, Member of Emmy-Noether Research Centre
Honours: Géza Grünwald Prize of János Bolyai Mathematical Society (2006),
Education activity up to now: (lectures/seminars taught, time spent with teaching); 1997-1999 demonstrator, 2000-2003 Ph.D student, 2003-2007 assistant lecturer (University of Debrecen, University of Erlangen-Nuernberg) Practices: Mathematical Logic and Set Theory, Algebra I, II, Geometry I, II, Linear Algebra and Analytical Geometry I, II, Differential geometry I, II, Analysis I, II, III, Complex Functional Theory, Elementary Mathematics I, II for Engineers, Lectures: Mathematical Logic and Set Theory, Transformation groups, Lie groups and Lie algebras, Elementary Mathematics I, II for Engineers, Seminars in group theory, geometry and algebra.
Presentation of work experience and achievements: Ph.D given by University of Erlangen-Nuernberg, Germany, 2003, Thesis: 3-dimensional Bol loops corresponding to non-solvable Lie groups Ph.D given by University of Debrecen, Hungary, 2004, Thesis: Geodesic loops with non-solvable left translation groups on 3-dimensional reductive spaces Scientific lecture for habilitation on the University Erlangen-Nuernberg, 2007.02.06: Multiplications on symmetric and reductive spaces Numbers of publications: 8 (published), 1 (submitted), 1 lecture note on University Erlangen-Nuernberg Talks at conferences: 19. Postdoc. Fellowship of Ministry of Education (2006-2007), Projects: 1999-2000, Differentiable loops, PPP-DAAD, 2005-2006, Loops in Group Theory and Lie Theory, PPP-DAAD.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i>

publications connected to the professional field of subject/subjects taught)

Á. Figula, K. Strambach, *Affine extensions of loops*, *Abh. Math. Sem. Univ. Ham.*, Vol. 74, pp. 151-162, 2004.

Á. Figula, K. Strambach, *Loops which are semidirect products of groups*, *Acta Math. Hung.*, Vol. 114, No. 3, pp. 247-266, 2007.

Á. Figula, *3-dimensional Bol loops as sections in non-solvable Lie groups*, *Forum Math.*, Vol. 17, No. 3, pp. 431-460, 2005.

Á. Figula, *3-dimensional loops on non-solvable reductive spaces*, *Advances in Geometry*, Vol. 5, pp. 399-428, 2005.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Á. Figula, *Bol loops as sections in semi-simple Lie groups of small dimension*, *Manuscripta Math.*, Vol. 121, pp. 367-384, 2006.

Á. Figula, *Affine reductive spaces of small dimension and left A-loops*, *Result. Math.*, Vol. 49, pp. 45-79, 2006.

Á. Figula, *3-dimensional Bol loops corresponding to solvable Lie triple systems*, *Publ. Math. Debrecen*, Vol. 70, No 1-2, pp. 59-101, 2007.

Á. Figula, *Geodesic loops*, *Journal of Lie Theory*, Vol. 10, pp. 455-461, 2000.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity: reviewer of Mathematical Reviews,

Organizer of the conference series Groups and Topological Groups,

International collaborations: University of Erlangen-Nuernberg, Prof. Karl Strambach, Theme: Topological groups,

2004-2005 Visiting researcher and lecturer of University Erlangen-Nuernberg,

University of Palermo, Prof. Claudio Bartolone, Theme: Finite groups and finite geometries,

2004 Visiting researcher of University Palermo (two months),

Name: István Gaál
Year of birth: 1960
University/College Degrees: master of sciences
Qualifications: mathematician
Language competence: English, German intermediate, Russian elementary
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, professor
Academic degree: Doctor of Academy
Science/Arts Academy fellowship:
Honours: Kató Rényi Prize (1984), Géza Grünwald Prize (1998), Academy Prize (1992), Széchenyi Professorship (1998-2001)
Education activity up to now: (lectures/seminars taught, time spent with teaching); Lectures and exercises on Introduction to Algebra, Number Theory, Linear algebra I-II Starting in 1984 8 hours of teaching per week
Presentation of work experience and achievements: Constructing efficient algorithms for calculating all solutions of Thue equations, norm form equations, especially index form equations. Determining power integral bases of algebraic number fields
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. I.Gaál, <i>Power integral bases in cubic relative extensions</i>, Experimental Math., 10(2001), 133-139. 2. I.Gaál, <i>On the resolution of resultant type equations</i>, Journal of Symbolic Comput., 34(2002), 137--144. 3. I.Gaál, <i>Diophantine Equations and Power Integral Bases</i>, New Computational Methods, Birkhauser Boston, 2002. 4. Y.Bilu, I.Gaál and K.Györy, <i>Index form equations in sextic fields: a hard computation</i>, Acta Arithm., 115(2004), 85-96. 5. I.Gaál and M.Pohst, <i>Diophantine equations over global function fields I: The Thue equation</i>, J.Number Theory 119(2006), 49--65.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: 49 publications cited in 211 articles and books

64 conference talks

monography: Diophantine equations and power integral bases (Birkhauser, Boston, 2002)

International collaborations: Michael Pohst (Technical University of Berlin)

Name: József Gáll
Year of birth: 1972
University/College Degrees: MSc in Mathematics, Teacher of Mathematics, Special English Translator of Mathematics (1997), MSc in Economics (2000).
Qualifications:
Language competence: Hungarian, English (fluent)
Current place of employment, position indicated in the posting: assistant lecturer (statistics, finance, financial mathematics), University of Debrecen, Faculty of Economics and Business Administration, Department of Economic analysis and Information technology for business.
Academic degree:
Science/Arts Academy fellowship:
Honours:
<p>Education activity up to now: (lectures/seminars taught, time spent with teaching);</p> <p>Courses: Information theory, Financial mathematics I and II, Option theory, Insurance mathematics, Statistics, Computer statistics, Probability theory, Numerical mathematics</p> <p>Assistant lecturer since 2000 at the Institute of Mathematics and Informatics later at the Faculty of Informatics of the University of Debrecen, from 2005 at the Faculty of Economics and Business Administration of the same university, before that time he gave seminars as a (PhD) student for 4 years. Visiting fellow (research and lecturing, 2005-2006) at Radboud University, Nijmegen, The Netherlands, Faculty of Science, Institute for Mathematics, Astrophysics and Particle Physics.</p>
<p>Presentation of work experience and achievements:</p> <p>Research areas: Discrete time financial markets. Forward interest rate curve models and fitting problems of interest rate models. Risk management, risk measures, stochastic dominance in finance. Empirical research, survey analysis of the Hungarian regional labour market.</p> <p>Lecture notes: Information theory (in Hungarian), Introduction to utility based portfolio management (both in Hungarian and in English), Option theory (both in Hungarian and in English), available at: http://mobidiak.inf.unideb.hu.</p>
<p>Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught)</p> <p>Gáll, J., G. Pap and M. v. Zuijlen (2003): "Limiting connection between discrete and continuous time forward interest rate curve models", Acta Applicandae Mathematicae, 78(1-3), 137-144.</p> <p>Gáll, J., G. Pap and M. v. Zuijlen (2004): "Maximum likelihood estimator of the volatility of forward rates driven by geometric spatial AR sheet", Journal of Applied Mathematics, 2004(4), 293--309.</p> <p>Holb, I. J., B. Heijne, J. C. M. Withagen, J. Gáll and M. J. Jeger (2005): "Analysis of summer epidemic progress of apple scab at different apple production systems in the Netherlands and Hungary", Phytopathology, 95(9), 1001--1020.</p> <p>Gáll, J., G. Pap and M. v. Zuijlen (2006): "Forward interest rate curves in discrete time settings driven</p>

by random fields", Computers & Mathematics with Applications, 51, 387--396.

Baran, S., J. Gáll, M. Ispány, and sc G. Pap (2007): ``Prediction of Hungarian mortality rates using Lee-Carter method", Acta Oeconomica, 57/1, 21-34.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity: member of the Hungarian Actuarial Society, member of the editorial board of the International Journal of Horticultural Science

International collaborations: joint research in the past years with colleagues of the Radboud University, Nijmegen, The Netherlands, Faculty of Science, Institute for Mathematics, Astrophysics and Particle Physics.

Name: Attila Gilányi
Year of birth: 1968
University/College Degrees: MSc in Mathematics, Kossuth Lajos University, Debrecen, Hungary (1992) MSc in Teaching Mathematics, Kossuth Lajos University, Debrecen, Hungary (1996)
Qualifications: Mathematician, Teacher of Mathematics
Language competence: Hungarian (mother tongue), German, English, Russian
Current place of employment, position indicated in the posting: Department of Analysis, Institute of Mathematics, University of Debrecen, Hungary, Associate Professor
Academic degree: PhD (Dr. rer. nat.) in Mathematics, University of Karlsruhe, Germany (1995) Dr. habil. in Mathematics, University of Karlsruhe, Germany (2001)
Science/Arts Academy fellowship:
Honours: ISFE Medal “for outstanding contributions to the 39th International Symposium on Functional Equations 2001”, 2001 Alexits György Prize of the Hungarian Academy of Sciences, 2002
Education activity up to now: (lectures/seminars taught, time spent with teaching); Teaching at the University of Karlsruhe, Germany: Mathematics for students in Economics Teaching at the University of Debrecen, Hungary: Applied Mathematics and their Applications for students in Physics, Chemistry, Informatics, Mathematics for students in Economics Analysis, Differential Equations, Measure and Integral Theory, Modern Analysis for students in Mathematics Analysis with Computer, Functional Equations and Inequalities, Stability of Functional Equations, Applied Analysis, Game Theory for students in Mathematics Mathematics with Computer, Applied Analysis, Game Theory for students in Economics Time spent with teaching: 12 years
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) 1. A. Gilányi, Zs. Páles, <i>On Dinghas-type derivatives and convex functions of higher order</i> , Real Anal. Exchange 27 (2001/02), 485-493. 2. A. Gilányi, <i>On a problem by K. Nikodem</i> , Math. Inequal. Appl. 5 (2002), 707-710. 3. A. Gilányi, C. T. Ng, J. Aczél, <i>On a functional equation arising from comparison of utility representations</i> , J. Math. Anal. Appl. 304 (2005), 572-583. 4. A. Gilányi, Z. Kaiser, Zs. Páles, <i>Estimates to the stability of functional equation</i> , Aequationes Math., 73 (2007), 125—143.

5. M. Adamek, A. Gilányi, K. Nikodem, Zs. Páles, *A note on three-parameter families and generalized convex functions*, J. Math. Anal. Appl., **330** (2007), 829—835.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. A. Gilányi, *Hyers-Ulam stability of monomial functional equations on a general domain*, Proc. Natl. Acad. Sci. USA **96** (1999), 10588-10590.
2. A. Gilányi, Zs. Páles, *A regularity theorem for composite functional equations*, Arch. Math. **77** (2001), 317-322.
3. A. Gilányi, Zs. Páles, *On Dinghas-type derivatives and convex functions of higher order*, Real Anal. Exchange **27** (2001/02), 485-493.
4. A. Gilányi, C. T. Ng, J. Aczél, *On a functional equation arising from comparison of utility representations*, J. Math. Anal. Appl. **304** (2005), 572-583.
5. M. Adamek, A. Gilányi, K. Nikodem, Zs. Páles, *A note on three-parameter families and generalized convex functions*, J. Math. Anal. Appl., **330** (2007), 829—835.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

1999—2001: General secretary of the Institute of Mathematics and Informatics of the University of Debrecen

International collaborations:

Periods of research abroad

- 1991 (7 months): University of Paderborn, Germany,
supported by the Tempus foundation
- 1992--1993 (10 months): University of Karlsruhe, Germany
supported by the German Academic Exchange Service (DAAD)
- 1993--1995 (2 years): University of Karlsruhe, Germany
supported by the German Academic Exchange Service (DAAD)
- 1998 (1 month): University of California Irvine, California, USA
supported by the NSERC of Canada
- 1998 (1 week): University of Louisville, Kentucky, USA
supported by the University of Louisville
- 1999 (2 months): University of Karlsruhe, Germany
supported by the German Academic Exchange Service (DAAD)
- 2001 (1 week): Technical University of Lodz, Branch in Bielsko-Biala, Poland
supported by the Technical University of Lodz
- 2001 (1 month): University of Waterloo, Canada,
supported by the University of Waterloo
- 2006 (1 week): University of Karlsruhe, Germany,
supported by the University of Karlsruhe

Joint papers with researchers from Canada, Germany, Poland.

Name: Lajos Hajdu
Year of birth: 1968
University/College Degrees: PhD
Qualifications: mathematician
Language competence: English
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, Associate Professor
Academic degree: -
Science/Arts Academy fellowship: -
Honours: Rényi Prize, Patai Prize, Grünwald Prize (János Bolyai Mathematical Society); Kalmár Prize (University of Szeged), János Bolyai Research Fellowship (two times), Academic Prize for Young Scientists (HAS)
Education activity up to now: (lectures/seminars taught, time spent with teaching); number theory, graph theory, linear algebra, discrete mathematics (13 years)
Presentation of work experience and achievements: 46 scientific papers in journals and conference proceedings 17 conference talks 12 MsC dissertations and OTDK dissertations as supervisor
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. M. Bennett, N. Bruin, Győry K. és Hajdu L., Powers from products of consecutive terms in arithmetic progression, Proc. London Math. Soc. 92 (2006), 273-306. 2. Győry K., Hajdu L., Pintér Á. és A. Schinzel, Polynomials determined by a few of their coefficients, Indag. Math. N. S. 15 (2004), 209-221. 3. N. Bruin, Győry K., Hajdu L. és Tengely Sz., Arithmetic progressions consisting of unlike powers, Indag. Math. 17 (2006), 539-555. 4. Hajdu L., Perfect powers in arithmetic progression. A note on the inhomogeneous case, Acta Arith. 113 (2004), 343-349. 5. Hajdu L. és R. Tijdeman, Polynomials dividing infinitely many quadrinomials or quintinomials, Acta Arith., 107 (2003), 381-404.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity:

Secretary of the Mathematical Committee of the 3rd class of the HAS, Secretary of the Mathematical Committee of the Debrecen Committee of the HAS

International collaborations: M. Bennett, N. Bruin, Y. Bugeaud, R. Tijdeman, A. Schinzel

Name: Tamás Herendi
Year of birth: 1966.
University/College Degrees: MSc in Mathematics
Qualifications:
Language competence: hungarian, english
Current place of employment, position indicated in the posting: Faculty of Informatics, University of Debrecen (1990 -) ; assistant lecturer (1990-2004), assistant professor (2004 -)
Academic degree: PhD in Mathematics
Science/Arts Academy fellowship: Bolyai Math. Soc., MTA Scientific Soc.
Honours:
Education activity up to now: (lectures/seminars taught, time spent with teaching); introduction to mathematics, mathematical logics, theory of algorithms, theory of formal languages and automata, coding theory, string algorithms, computer algebra, programming, combinatory and graph theory; teaching time: since 1990 at least 8 hours a week.
Presentation of work experience and achievements: KU Nijmegen, The Netherlands, april 1991 – september 1991 (TEMPUS grant) TU Graz, Austria, february 1993 – may 1993 (ÖAAD grant) TU Graz, Austria, april 2001 (CEEPUS grant) Short visits: (1-2 weeks) TU Graz (several times), University of Saarland and University of Leiden
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) T. Herendi, A. Pethő, <i>Trinomials Wich are Divisible by Quadratic Polynomials</i> Acta Ac. Paed. Agriensis (1994), 61-73. P. Grabner, T. Herendi, R.F. Tichy, <i>Fractal Digital Sums and Codes Applicable</i> Algebra in Engineering, Communication and Computing 8 (1997), 33-39. T. Herendi, T. Siegl, R.F. Tichy, <i>A Note on Non-Uniformly Distributed</i> <i>Pseudorandom Number Generation Using Linear Transformations</i> Computing 59 (1997), 163-181. L. Hajdu, T. Herendi, <i>Explicit bounds for the solutions of elliptic equations</i> <i>with rational coefficients</i> J. Symbolic Computation 25 (1998), 361-366. T. Herendi, <i>Uniform distribution of linear recurrences modulo prime powers</i> J. Finite Fields And Applications 10 (2004), 1-23.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

International collaborations:

Name: Endre Iglói
Year of birth: 1963
University/College Degrees: university
Qualifications: mathematician (1986), teacher of mathematics (1989)
Language competence: –
Current place of employment, position indicated in the posting: Department of Applied Mathematics and Probability Theory, Faculty of Informatics, University of Debrecen computer assistant
Academic degree: –
Science/Arts Academy fellowship: –
Honours: –
Education activity up to now (lectures/seminars taught, time spent with teaching): general statistics, discrete mathematics, computer statistics 1-2, mathematics for economists 3, statistics 1-2, statistics for economists 1-2, multivariate statistics, probability theory 1, probability and statistics. 20 years
Presentation of work experience and achievements: –
Professional, scientific (artistic) work of the past five years (listing the most important <u>maximum</u> 5 publications connected to the professional field of subject/subjects taught): –
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement (if different from the above): 1. E. Iglói, Renormalization group of and convergence to the LISDLG process. ESAIM: Probability and Statistics 8 (2004). 2. E. Iglói, Self-similarity and dilative stability. 2005. (unpublished manuscript). 3. E. Iglói, Superposition of death processes of immigration-birth-death processes and functional limit theorems for convergence to the LISDLG process. 2004. (unpublished manuscript). 4. E. Iglói, A dilative stable type functional limit theorem for Cox processes. 2005. (unpublished manuscript). 5. E. Iglói, Superpositions of immigration-birth-death processes and their multifractal limit process. 2006. (unpublished manuscript).
Scientific/professional public activity, international collaborations: Scientific/professional public activity: – International collaborations: –

Name: Márton Ispány
Year of birth: 1966
University/College Degrees: Kossuth Lajos University
Qualifications: MSc in Mathematics, 6/1989
Language competence: English, Russian
Current place of employment, position indicated in the posting: Assistant Professor, Department of Applied Mathematics and Probability Theory, Faculty of Informatics, University of Debrecen
Academic degree: PhD, 1997
Science/Arts Academy fellowship:
Honours: Bolyai Scholarship, since 9/1999 (Hungarian Academy of Sciences).
Education activity up to now: (lectures/seminars taught, time spent with teaching); Basic Probability Theory, Stochastic Processes, Statistics, Multivariate Analysis, Computer Statistics, Data Mining, Time Series Analysis, Numerical Analysis, Biostatistics, Operation Research, SAS Business Intelligence 15 years
Presentation of work experience and achievements: Alexits György Award of Hungarian Academy of Sciences, 2004. Farkas Award for Young Statisticians and Applied Mathematicians (BJMT), 1999.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Ispány, M., Krasznahorkay, I., On speed of stochastic CART model search. <i>Austrian Journal of Statistics</i> 36 (2007), Number 1, 27-40. 2. Baran S., Gáll, J., Ispány, M. and Pap, G.. Forecasting Hungarian mortality rates using the Lee--Carter method. <i>Acta Eoconomica</i> 57 (2007), Number 1, 21-34. 3. Ispány M., Pap Gy., van Zuijlen, Fluctuation limit of branching processes with immigration and estimation of the means, <i>Advances in Applied Probability</i> 37 (2005), 523-538. (IF=0.832) 4. Szóke Sz., Komlósi I., Korom E., Ispány M., Mihók S., A statistical analysis of population variability in Bronze Turkey considering gene conservation, <i>Archiv für Tierzucht</i> 47 (2004), No. 4, 377-386. (IF=0.251) 5. Ispány M., Pap Gy., van Zuijlen, Asymptotic inference for nearly unstable INAR(1) models, <i>Journal of Applied Probability</i> 40 (2003), 750-765. (IF=0.471)
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Ispány M., Pap Gy., van Zuijlen, Asymptotic behaviour of estimators of the parameters of nearly unstable INAR(1) models, <i>Foundations of Statistical inference Proceedings of the Shores Conference 2000</i>, Physica-Verlag, 193-204, 2003. 2. Ispány M., On stationarity of additive bilinear state space representation of time series, in <i>Proceedings of the Conference on Stochastic Differential and Difference Equations (eds. Csizsár I. and Michaletzky Gy.)</i>, Birkhauser, Boston, 1997, 143-155. 3. Ispány M., On stationarity and second order properties of a scalar-valued nonlinear time

- series with gaussian residuals, *Comp. Math. Appl.* **35** (1998) , No. 4, 95-104. (IF=0.413)
4. Arató M., Baran S., Ispány M., On functionals of complex Ornstein-Uhlenbeck processes, *Comp. Math. Appl.* **37** (1999) , No. 1, 1-13. (IF=0.413)
 5. Ispány, M., Terdik, Gy., Criteria for the existence of even order moments of bilinear time series. *Comm. in Statistics, Stochastic Models* **9** (1993), 255--273.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Hungarian Mathematical Society
- Hungarian Bio-statistical Society
- Hungarian Actuarial Society

International collaborations:

- Chalmers University, Gothenburg, Sweden (Tommy Norberg), 1996
- University of Nijmegen, The Netherlands (M.C.C. van Zuijlen), 1998-2006 several times
- WHO/HQ, Geneve, Suisse (Somnath Chatterji), 2006

Name: Márk Kósa
Year of birth: 1975
University/College Degrees: M.Sc.
Qualifications: computer programmer mathematician
Language competence: Hungarian, English
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Informatics, research fellow
Academic degree: –
Science/Arts Academy fellowship: –
Honours: –
Education activity up to now: (lectures/seminars taught, time spent with teaching); <i>Data structures and algorithms</i> lecture and practice, <i>Database systems</i> practice, <i>Mathematics in digital image processing</i> practice, <i>Artificial intelligence</i> practice, <i>Introduction to informatics</i> practice, <i>High level programming languages</i> practice. Time spent with teaching: 9 years.
Presentation of work experience and achievements: <ul style="list-style-type: none"> • Certificate of merit from the minister of Hungarian Ministry of Education and Culture for the coaching of successful students in International Olympiad in Informatics, 2006. • Tempus Scholarship, University of Paderborn, 1998 • Summer scholarship, KLTE, 1997.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Kósa Márk, Nagy Benedek, Pánovics János: <i>Megoldáskereső algoritmusok hatékonyságának vizsgálata az állapotér-reprezentációk függvényében</i>, Számítástechnika az oktatásban 2006, XVI. nemzetközi konferencia, Szováta, Románia, 2006. május 25–28., 76–81. oldal. 2. Juhász István, Kósa Márk, Pánovics János: <i>C példatár</i>, Panem, Budapest, 2005. 3. Kósa Márk, Pánovics János, Gunda Lénárd: <i>An evaluating tool for programming contests</i>, Teaching Mathematics and Computer Science (2005) 3 (1), p. 103–119. 4. Várterész Magda, Nagy Benedek, Kósa Márk, Pánovics János: <i>A Mesterséges intelligencia tárgy bevezető kurzusának gyakorlatai a Debreceni Egyetemen</i>, Informatika a Felsőoktatásban 2002 Konferencia, Debrecen, 2002. augusztus 28–30., 1103–1109. oldal. 5. Nagy Benedek, Kósa Márk: <i>Logical puzzles (truth-tellers and liars)</i>, Kovács Emőd (ed.) et al., Proceedings of the 5th International Conference on Applied Informatics, Eger, Hungary, January 28–February 3, 2001, p. 105–112 (2001).
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Kósa Márk: <i>Stochastic Simulation of Markov-Modulated Finite-Source Queues in Java Envi-</i>

ronment, 6th International Conference on Applied Informatics, Eger, 27–31 January 2004, Vol. II., p. 369–377. augusztus 28–30., 1146–1153. oldal.

2. **Kósa Márk:** *A kiszolgálási elvek hatása a Markov-vezérelt véges forrású sorbanállási rendszerek teljesítmény-mérőszámaira*, Informatika a Felsőoktatásban 2002 Konferencia, Debrecen, 2002.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- ECDL interrogator (since 2002).
- Organizing of the ACM International Programming Contest's local (university) round, coaching of the winners for the Central European round.
- Copy editor of *Teaching Mathematics and Computer Science* (since 2003).

International collaborations:

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Name: László Kozma
Year of birth: 1960
University/College Degrees: Msc in Mathematics 1984, University of Debrecen
Qualifications: mathematician and English-Hungarian translator
Language competence: English (high), German (intermediate)
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics; Associate Professor, Head of the Department of Geometry
Academic degree: PhD 1990, habilitation 2005
Science/Arts Academy fellowship:
Honours: Rényi Kató Prize for Young Mathematicians, János Bolyai Mathematical Society, 1984 Grünwald Géza Prize, János Bolyai Mathematical Society, 1989 Bolyai János Research Fellowship, 1999-2001 Széchényi István Fellowship, 2003-2006
Education activity up to now: (lectures/seminars taught, time spent with teaching); Linear algebra I-II, Calculus I-II, Geometry, Geometry and their models, Mathematics for economic and engineering students, Introduction to Geometry, Computer Graphics; Time spent with teaching: 20 years
Presentation of work experience and achievements: University teacher for 20 years in different positions; Vice Director of the Institute of Mathematics and Informatics 1999-2001 Vice Dean of the Faculty of Natural Science 2004-2007 Research in differential geometry; 26 papers in mathematical refereed journals, 2 sections in books. 35 conference talks, 6 invited lectures at conferences. Advisor for 2 PhD dissertations. Several scientific grants (OTKA, TÉT, Tempus, FKFP, etc.) Time spent abroad: 1989-90: DAAD Fellowship, Würzburg, Germany, 10 months 1992: Matsumae Foundation Fellowship, Sapporo, Japan, 3 months 2001: Eötvös State Grant, Indianapolis, USA, 4 months 2005: JSPS Grant, Sapporo, Japan, 2 months
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) [1] Dispersing of geodesics in Berwald spaces of nonpositive flag curvature (coauthors: Cs. Varga, Alexandru Kristaly), Houston Journal of Mathematics, 30 (2004), 403-420. [2] On holonomy structures of Finsler manifolds, in: Handbook of Finsler Geometry, ed. by P.L. Antonelli, Kluwer Academic Publishers, 2003, 445-488.

- [3] Assimilation of mathematical knowledge using Maple, Teaching Math. and Comp. Sci., 2/1, 2003, 85-92. (coauthor: Z. Kovács)
- [4] Metric characterization of Berwald spaces of non-positive flag curvature. Journal of Geometry and Physics, 56, 2006, 1257-1270.(coauthor: Alexandru Kristály)
- [5] Weinstein's theorem for Finsler manifolds, Mathematical Journal of Kyoto, 46-2, 2006, (coauthor: Ioan Radu Peter)

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Technical editor of Publ. Math. Debrecen from 1996
- Acta Math. Acad. Paed. Nyíregyháza, member of the editorial board
- Reviewer of doctorla thesises
- Reviewer for Math Reviews and Zentralblatt

International collaborations:

- Zhongmin Shen, Indianapolis, USA
- Hideo Shimada, Sapporo, Japan
- Demeter Krupka, Olomouc, Czech Republic
- Willy Sarlet, Ghent, Belgium

Name: Piroska Lakatos
Year of birth: 1948
University/College Degrees: 1971 MSc (Hungarian degree of Graduated Teacher of Mathematics), University of Debrecen 1966-71 Student of Mathematics, Institute of Mathematics, University of Debrecen
Qualifications: 1982-86 Postgraduate studies, Department of mathematics, Kyiv State University, Kyiv, Ukraine 1973 Univ. Dr. in Mathematics, University of Debrecen; Thesis: "Wreath products of finite cyclic groups" 1971-73 Postgraduate studies, Department of Algebra, University of Debrecen
Language competence: Hungarian (mother language), English (fluent), Russian (fluent) and German (good)
Current place of employment, position indicated in the posting: Associate Professor, Institute of Mathematics, Department of Algebra and Number Theory, University of Debrecen.
Academic degree: 2004 Habilitation, University of Debrecen 1986 PhD (Hungarian degree of Candidate of Science, National Board for Scientific Degrees, Budapest, Hungary 1986 PhD Postgraduate studies, Department of mathematics, Kyiv State University, Kyiv, Ukraine
Science/Arts Academy fellowship:
Honours: 2002-2006 Szechenyi Scholarship of Ministry of Education, Hungary 1983 Teaching and Research Award (Distinction) of the Ministry of Education, Hungary 1972 Medal of Distinction at the Scientific Research Competition of Hungarian University students
Education activity up to now: (lectures/seminars taught, time spent with teaching); Teaching a variety of courses, including courses in Discrete Structures, Linear Algebra, Group Theory, Ring Theory, Theory of Algebras, Coding Theory, Computer Algebra (Maple, GAP and MacTutor computer software, in particular), Numerical Analysis, Formal Languages, Automata, Graph Theory, Discrete and Combinatorial Mathematics, Programming Languages (PL/1, FORTRAN, BASIC, PASCAL). Coding theory, Theory of Finite Dimensional Algebras and the Computer Algebra courses were organized.
Presentation of work experience and achievements: I have 25 publications published in international journals, cited in 28 papers or books.

I also have about 30 conference abstract,

Theses:

1. Lakatos, P., *Wreath products of finite cyclic groups*, Dr. of University thesis, Kossuth Lajos university, (1973)
2. Lakatos, P., *Wreath products of abelian groups and its application in coding theory*, Dissertation , Ph.D.thesis, Kiew State University (1986), Lakatos, P. *Representations of finite dimensional algebras and its applications* ,
3. Lakatos, P., *Representation of finite dimensional algebras and its application*, Theses of habilitation, (2003), University of Debrecen , Debrecen.

Lecture Notes:

1. Lakatos, P., Gárdos, É., BASIC exercises (programs for ABC-80 computer) (in Hungarian) 184 p. Tankönyvkiadó, Budapest, 1982.
2. Lakatos, P., Gárdos, É., Papp, Z., *Introduction to the Computer Science* (in Hungarian) 116 p. Tankönyvkiadó, Budapest, 1983.
3. Lakatos, P., *Algebraic coding theory*, 118 p. Debrecen University ed. (1998) in Hungarian

Professional, scientific (artistic) work of the past five years: (listing the most important *maximum 5* publications connected to the professional field of subject/subjects taught)

1. Lakatos, P., *On zeros of reciprocal polynomials*, Publ. Math. **61**/3-4. 645--661. (2002).
2. Dlab, V., Lakatos, P., *On bounds of spectral radii of Coxeter transformations of wild trees*, Linear Algebra and Its Applications **365** 143-153. (2003).
3. Lakatos, P., *A new construction of Salem polynomials*, C. R. Math. Acad. Sci. Soc. R. Can. 25 no 2. (2003), 47--54;
4. Lakatos, P., Losonczi L., *On zeros of reciprocal polynomial of odd degree*, J. Inequal. Pure Appl. Math. no. 3 (2003) Article 60, 8 pp. (electronic, <http://jipam.vu.edu.au>).
5. Lakatos, P., Losonczi, L., *Self-inversive polynomials whose zeros are on the unit circle*, Publ. Math. **65**/3-4.(2004), 409--421

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. Lakatos, P., *The structure of wreath product of two cyclic group of prime power order*, (Russian) Publ. Math. Debrecen , **22** (1975), 293-306.
2. Drensky, V., Lakatos, P., *Monomial ideals, group algebras and error correcting codes*, Lecture Notes in Computer Science vol. **357**, (1988), 181-188. Springer-Verlag
3. Lakatos, P., *On construction of some classes of quasi-hereditary algebras*, Communications in Algebra **5** (1998), 1567- 1576.
4. Lakatos, P., *On Coxeter polynomials of wild stars*, Linear Algebra and Its Applications **293** (1999), 159-170.
5. Lakatos, P. *On polynomials having zeros on the unit circle*, C. R. Math. Acad. Sci. Soc. R. Can. **24** (2002), no. 2, 91-96.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

Member of the J. Bolyai Math. Society (Hungary),
Member of the American Mathematical Society
Member of the Disciplinary Committee of the University of Debrecen
Member of a number of PhD Examination Committees
Member of the Research group of Institute of Mathematics of Hungarian Academy of Science

International collaborations:

- Carleton University, Ottawa , Department of Mathematics and Statistics, Canada
- University of Paderborn, Department of Computing Science, Germany

Name: Rezső L. Lovas
Year of birth: 1978
University/College Degrees: Physics and English—Hungarian special translation
Qualifications: PhD in Mathematics and Computer Sciences
Language competence: Hungarian (mother tongue), English, German, Russian, French
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, teaching assistant
Academic degree: PhD
Science/Arts Academy fellowship:
Honours:
Education activity up to now: (lectures/seminars taught, time spent with teaching); Linear algebra practice 1, 2, Geometry 2, 3 practice, Applied mathematics and its methods 1, 2, 3, Mathematics 1, 2 practice for physicists and engineers, Mathematics II practice for chemists, Differential equations, Numerical analysis, Riemannian geometry; 4 years.
Presentation of work experience and achievements: Until now I have mainly studied the geometric vector fields of spray and metric structures. I derived several necessary and sufficient conditions for a vector field on a spray manifold to be affine or projective. I proved the statement that the metric tensor of a positive Finsler—Minkowski norm is automatically positive definite provided it is non-degenerate. I gave a complete description of metric derivatives attached to an Ehresmann connection under certain conditions. I found a covariant derivative having some of the good properties of Cartan's under more general circumstances. I showed that this gives back the proof of the uniqueness of Cartan's covariant derivative on a Finsler manifold, with no Ehresmann connection given in advance. To my knowledge, this is the first coordinate-free proof for this result. I characterized the Killing vector fields of some special types of metrics and the translations of weakly normal Miron regular metrics. I gave an application to Randers manifolds, and I gave a visualizable geometric characterization of the Killing fields of a Funk metric.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught) R. L. Lovas, Affine and projective vector fields on spray manifolds, <i>Periodica Mathematica Hungarica</i> 48 (2004) 165--179. R. L. Lovas, On the Killing vector fields of generalized metrics, <i>SUT Journal of Mathematics</i> 40 (2) (2004) 133--156. R. L. Lovas, Infinitesimal isometries of generalized metrics, Вестник Нижегородского университета, Сер. Математика 1 (3) (2005) 162--171. Z. Daróczy, K. Lajkó, R. L. Lovas, Gy. Maksa and Zs. Páles, Functional equations involving means, <i>Acta Math. Hung.</i> , to appear. R. L. Lovas, J. Pék and J. Szilasi, Ehresmann connections, metrics and good metric derivatives, <i>Finsler Geometry, Sapporo 2005, In memory of Makoto Matsumoto, Advanced Studies in Pure Mathematics</i> , to appear.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

International collaborations:

Technische Universität Darmstadt, Fachbereich Mathematik, Arbeitsgruppe Algebra, Geometrie und Funktionalanalysis

Name: Lajos Molnár
Year of birth: 1964
University/College Degrees: MSc in Mathematics
Qualifications: Mathematician, English-Hungarian scientific translator
Language competence: English, fluent
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, Associate Professor
Academic degree: Phd, DSc.
Science/Arts Academy fellowship: Bolyai János Mathematical Society, American Mathematical Society
Honours: Erdős Pál Award, Széchenyi Professorship, Humboldt Scholarship, Bolyai Scholarship, Bolyai Plaque
Education activity up to now: (lectures/seminars taught, time spent with teaching); Measure theory, Complex functions, Functional analysis. Banach algebras, C*-algebras, von Neumann algebras. Analysis I-III, Differential equations, Calculus I-II, Linear algebra. 18 years' experience in teaching.
Presentation of work experience and achievements: More than 90 research papers, 1 research monograph. 3 lecture notes for students.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) L. Molnár, Selected Preserver Problems on Algebraic Structures of Linear Operators and on Function Spaces, Lecture Notes in Mathematics, Vol. 1895, Springer, 2006. L. Molnár and P. Semrl, Non-linear commutativity preserving maps on self-adjoint operators, Quart. J. Math. 56 (2005), 589-595. L. Molnár, Sequential isomorphisms between the sets of von Neumann algebra effects, Acta Sci. Math. (Szeged) 69 (2003), 755-772. L. Molnár and M. Barczy, Linear maps on the space of all bounded observables preserving maximal deviation, J. Funct. Anal. 205 (2003), 380-400. L. Molnár, Orthogonality preserving transformations on indefinite inner product spaces: generalization of Uhlhorn's version of Wigner's theorem, J. Funct. Anal. 194 (2002), 248-262.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

L. Molnár, Selected Preserver Problems on Algebraic Structures of Linear Operators and on Function Spaces, Lecture Notes in Mathematics, Vol. 1895, Springer, 2006.

L. Molnár, Orthogonality preserving transformations on indefinite inner product spaces: generalization of Uhlhorn's version of Wigner's theorem, J. Funct. Anal. **194** (2002), 248-262.

L. Molnár, Transformations on the set of all n -dimensional subspaces of a Hilbert space preserving principal angles, Commun. Math. Phys. **217** (2001), 409-421.

M. Györy and L. Molnár, Diameter preserving linear bijections of $C(X)$, Arch. Math. **71** (1998), 301-310.

L. Molnár, The set of automorphisms of $B(H)$ is topologically reflexive in $B(B(H))$, Studia Math. **122** (1997), 183-193.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

Member of the Mathematical Committee of the Hungarian National Foundation for Scientific Research,

Member of the Doctoral Committee of the Mathematical Division of the Hungarian Academy of Sciences

International collaborations:

University of Ljubljana and University of Maribor, Slovenia (joint bilateral research project)

University of Dresden, Germany (very active scientific cooperation)

Looser scientific connections to Spain, England, USA.

Name: Zoltán Muzsnay
Year of birth: 1968
University/College Degrees: University of Debrecen, University Paul Sabatier (France)
Qualifications: mathematician
Language competence: French, English
Current place of employment, position indicated in the posting: University of Debrecen, Associate Professor
Academic degree: Ph.D., Habilitation
Science/Arts Academy fellowship:
Honours: Fellowship of the French Government (1993-1997), Fellowship of the Hungarian Academy of Sciences (1992-1993), Fellowship of the European Community (1990-1991), Rényi Kató Prize of Bolyai János Mathematical Society, 1990,
Education activity up to now: (lectures/seminars taught, time spent with teaching); Teaching position: Associate professor, University of Debrecen 2006-present, (8h/week), Assistant professor, Kossuth Lajos University, 1998-2006, (8h/week) Teaching assistant, KLTE, 1989-1991, (4h/week) Invited teaching position: Invited professor: Paul Sabatier University, Toulouse (France), 1998, (4h/week), Invited professor: Université Libanaise, Beirut, Lebanon, 2002, Lectures/seminars taught: Calculus, analysis, linear algebra, analytical geometry, differential geometry, differential equations, partial differential equations, Lie groups, topology. PhD course taught: over-determined partial differential systems, analysis on manifolds
Presentation of work experience and achievements: Teaching position: Associate Professor, University of Debrecen 2006-present, 8h/week, Assistant professor, Kossuth Lajos University, 1998-2006, 8h/week Teaching assistant, KLTE, 1989-1991, (4h/week) Invited teaching position: Invited professor: Paul Sabatier University, Toulouse (France), 1998, (4h/week), Invited professor: Université Libanaise, Beirut, Lebanon, 2003, Invited lecturer: 2006. Université Paul Sabatier, France 2006. University Babes-Bolyai, Clus-Napoca, Romania 2003. LaTrobe University, Melbourne, Ausztrália,

2003. Université Libanaise, Bejrút, Libanon,
2002. University Babes-Bolyai, Clus-Napoca, Romania
2001. University of Toledo, USA,
2001. University Babes-Bolyai, Clus-Napoca, Romania
1999. Université Paul Sabatier, France
1999. Silesian University, Czech Republic,
1998. Université Paul Sabatier, France,
1997. West University, Timisoara, Romania,

Professional, scientific (artistic) work of the past five years: (listing the most important *maximum 5* publications connected to the professional field of subject/subjects taught)

- **The Euler-Lagrange PDE and Finsler metrizable, Houston Journal of Mathematics, 32 no. 1, (2006) pp. 79-98.**
- **An invariant variational principle for canonical flows on Lie groups, J. Math. Phys. 46 (2005), no. 11, 112902, 11 pp.**
- **Invariant Shen connections and geodesic orbit spaces, Period. Math. Hungar. 51 (2005), no. 1, 37--51.**
- **Inverse problem of the calculus of variations on Lie groups, Differential Geom. Appl. 23 (2005), no. 3, 257--281. (with G. Thompson),**
- **On the linearizability of 3-webs, Nonlinear Analysis, 47, (2001), 2643-2656, (with J. Grifone and J. Saab),**

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

International collaborations with

Gerard Thompson, University of Toledo, USA,
Joseph Grifone, Université Paul Sabatier, France,
Alain Henaut, Université de Bordeaux, Franciaország,
Jihad Saab, Université Libanaise, Libanon,
Olga Krupkova, Silesian University, Czech Republic,
Joseph Landsberg, USA.

Name: Benedek Nagy
Year of birth: 1973
<p>University/College Degrees: 2000 University of Debrecen, Debrecen, M. A. in General and Applied Linguistics</p> <p>2000 University of Debrecen, Debrecen, M. Sc. in Teacher of Physics</p> <p>1999 Kossuth Lajos University, Debrecen, M. Sc. in Software Engineering Mathematics (Computer Science)</p> <p>1998 Kossuth Lajos University, Debrecen, M. A. in Philosophy with Logic Specialization</p> <p>1997 Kossuth Lajos University, Debrecen, B. Sc. in Programming Mathematics</p> <p>1996 Kossuth Lajos University, Debrecen, M. Sc. in Physics</p>
Qualifications:
Language competence: English, Russian
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Informatics, Department of Computer Science, assistant professor
Academic degree: PhD
Science/Arts Academy fellowship:
<p>Honours: 2006 János Kemény Prize (John von Neumann Computer Society)</p> <p>2006 Award of Universitas Foundation</p> <p>2004 Prize of Foundation László Patai (János Bolyai Society of Mathematics)</p> <p>1997 Honors for KLTE Studies</p> <p>1997 OTDK Special Prize</p> <p>1996 Rezső Bognár Prize</p> <p>1992 Radon-Nykodim-Lebesgue Prize</p>
<p>Education activity up to now: (lectures/seminars taught, time spent with teaching);</p> <p>Lectures and seminars mostly on Theoretical Computer Science: Formal languages, Mathematical logic, Artificial Intelligence, New computing paradigms, DNA computing, Architectures, Compilers, Genetic algorithms, Computer Science, Algorithms, etc.</p> <p>11 years teaching in higher education</p>
<p>Presentation of work experience and achievements:</p> <p>Several papers in leading scientific journals, several papers in scientific conferences, several presentations on leading international scientific conferences. A book chapter and 2 lecture notes.</p>
<p>Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught)</p>

Union-free languages and 1-cycle-free-path-automata, *Publicationes Mathematicae Debrecen* 68 (2006), 183-197.

with L. Szegedi, Membrane computing and graphical operating systems, *Journal of Universal Computer Science - JUCS* 12/9 (2006), 1312-1331.

On the language equivalence of NE star-patterns, *Information Processing Letters* 95 (2005), 396-400.

An algorithm to find the number of the digitizations of discs with a fixed radius, *Electronic Notes in Discrete Mathematics* 20 (2005), 607-622.

The languages of SAT and n-SAT over finitely many variables are regular, *Bulletin of the European Association for Theoretical Computer Science (Bulletin of the EATCS)* 82 (2004 Febr.), 286-297.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

with Robin Strand, Distances Based on Neighbourhood Sequences in Non-Standard Three-Dimensional Grids, *Discrete Applied Mathematics - DAM* 155/4 (2007), 548-557.

Distances with Neighbourhood Sequences in Cubic and Triangular Grids, *Pattern Recognition Letters* 28 (2007), 99-109.

with R. Strand, C. Fouard, G. Borgefors, Generating Distance Maps with Neighbourhood Sequences, DGC1 2006, *Discrete Geometry for Computer Imagery*, Szeged, Hungary, Lecture Notes in Computer Science, LNCS 4245, 295-307.

with M. Barbaiani, C. Bibire, J. Dassow, A. Delaney, Sz. Fazekas, M. Ionescu, G. Liu and A. Lodhi, The power of programmed grammars with graphs from various classes, *Journal of Applied Mathematics and Computing - JAMC* 22 (2006) 21-38.

with Adrian-Horia Dediu, Renate Klempien-Hinrichs and Hans-Jörg Kreowski, Contextual Hypergraph Grammars - A New Approach to the Generation of Hypergraph Languages, DLT 2006, Tenth International Conference DEVELOPMENTS IN LANGUAGE THEORY, Santa Barbara, CA, USA, 327-338. (Lecture Notes in Computer Science, LNCS 4036)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

Member of John von Neumann Computer Society, János Bolyai Society of Mathematics, IEEE, etc.

Reviewer of 7 international journals (*Pattern Recognition*, *Information Sciences*, *IEEE Tr. Image Processing* etc.) and of 7 international conferences. Chairman at 3 international conferences.

International collaborations:

GRLMC, URV, Tarragona, Spain

Bremen University, Bremen, Germany

Name: Gábor Nyul
Year of birth: 1980
University/College Degrees: mathematician
Qualifications:
Language competence: English (intermediate), German (elementary)
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Sciences, Institute of Mathematics, research fellow
Academic degree: PhD
Science/Arts Academy fellowship:
Honours:
Education activity up to now: (lectures/seminars taught, time spent with teaching); I gave lectures and exercises for 6 years on: Linear algebra and analytic geometry 1 and 2 seminar, Algebra and number theory lecture and seminar, Combinatorics seminar, Discrete optimization, Enumeration problems and set systems, Cryptography 1 seminar, Discrete mathematics 1 and 2 seminar, Introduction to biomathematics seminar
Presentation of work experience and achievements: My results are from algebraic number theory and the theory of diophantine equations. I investigated monogeneity of algebraic number fields and related topics, determining power integral bases, solving index form equations, computing field indices. These are summarized in five publications, and I presented contribution to three international and four national conferences.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) [1] I. Gaál and G. Nyul, <i>Computing all monogeneous mixed dihedral quartic extensions of a quadratic field</i> , Journal de Théorie des Nombres de Bordeaux, 13 (2001), 137-142. [2] G. Nyul, <i>Power integral bases in totally complex biquadratic number fields</i> , Acta Academie Paedagogicae Agriensis, Sectio Mathematicae, 28 (2001), 79-86. [3] G. Nyul, <i>Non-monogeneity of multiquadratic number fields</i> , Acta Mathematica et Informatica Universitatis Ostraviensis, 10 (2002), 85-93. [4] G. Nyul, <i>A divisibility problem of binomial coefficients</i> , Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös nominatae, Sectio Mathematica, 47 (2004), 115-121. [5] I. Gaál and G. Nyul, <i>Index form equations in biquadratic fields: the p-adic case</i> , Publicationes Mathematicae Debrecen, 68 (2006), 225-242.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: International collaborations:

Name: Zsolt Páles
Year of birth: 1956
University/College Degrees: MSc (Kossuth Lajos University, Debrecen, 1980)
Qualifications: MSc in mathematics (1980), Certificated English-Hungarian specialist translator (in mathematics, 1986)
Language competence: english (read, written, spoken), german (read, written, spoken), russian (read, written)
Current place of employment, position indicated in the posting: Professor, Institute of Mathematics, University of Debrecen
Academic degree: PhD, CSc, DSc
Science/Arts Academy fellowship: --
Honours: Grünwald Géza Memorial Prize (1983), Fellowship of the Alexander von Humboldt Foundation (1991-1992), Alexits György Prize (1992), Széchenyi Professorship (1997-2000), Széchenyi István Scholarship (2001-2005), Bolyai Farkas Prize of the Arany János Foundation (2000), Prize of the Hungarian Academy of Sciences (2004).
Education activity up to now: (lectures/seminars taught, time spent with teaching); <i>Courses taught:</i> Introduction to analysis, Differential and integral calculus, Ordinary differential equations, Complex function theory, Partial differential equations, Distribution theory, Measure and integral theory, Real functions theory, Orthogonal series, Functional analysis, Fixed point theory, Convex analysis, Nonsmooth analysis, Set-valued analysis, Extremum problems, Optimal control theory, Functional equations, Functional inequalities <i>Time spent with teaching:</i> 4-5 hours lectures/week and 2-3 hours seminars/week starting from 1980.
Presentation of work experience and achievements: Graduated in 1980 in mathematics. Obtained the PhD and Candidate of Science degrees in 1982 and 1987, Associate Professor is in 1988. Defended the Doctor of Science and Habilitation theses in 2001, Full Professor is in 2002. Research areas: Functional equations and inequalities, nonsmooth and convex analysis, optimal control theory, nonlinear optimization, variational inequalities. Author of 153 research papers (a part of them is co-authored by 23 and 14 foreign and Hungarian co-authors). Editor of one book, four dissertations, and two university lecture notes. Received 650 citations in 330 papers. 130 talks on conferences, seminars and workshops. Awarded the Bolyai Farkas Prize in 2000 and the Prize of the Hungarian Academy of Sciences in 2004. Supervisor of 7 PhD students (4 have already defended the dissertations). Supervisor of more than 30 Master theses.
Professional, scientific (artistic) work of the past five years: (most important <i>maximum</i> 5 publications connected to the professional field of subject/subjects taught) <ul style="list-style-type: none"> • Zs. Páles, <i>Extension theorems for functional equations with bisymmetric operations</i>, Aequationes Math. 63 (2002), 266-291. • Z. Daróczy—Zs. Páles, <i>Gauss composition of means and the solution of the Matkowski-Suto problem</i>, Publ. Math. Debrecen 61 (2002), 157-218. • Zs. Páles, <i>On approximately convex functions</i>, Proc. Amer. Math. Soc. 131 (2003), 243-252. • A. Járai—Gy. Maksa—Zs. Páles: <i>On Cauchy differences that are also quasiums</i>, Publ. Math. Debrecen 65 (2004), 381-398. • Zs. Páles—V. Zeidan, <i>Infinite dimensional Clarke generalized Jacobian, Set-Valued Anal.</i> 14 (2007), 433-454.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

- Zs. Páles, *Characterization of quasideviation means*, Acta Math. Hungar. **40** (1982), 243-260.
- Zs. Páles, *Inequalities for differences of powers*, J. Math. Anal. Appl. **131** (1988), 271-281.
- Zs. Páles, *On reduction of linear two variable functional equations to differential equations without substitutions*, Aequationes Math. **43** (1992), 236-247.
- Zs. Páles—V. Zeidan, *First and second order necessary conditions for control problems with constraints*, Trans. Amer. Math. Soc. **346** (1994), 421-455.
- Zs. Páles—P. Volkmann—R. D. Luce, *Stability of functional equations with square-symmetric operations*, Proc. Natl. Acad. Sci. U.S.A. **95** (1998), 12772-12775.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Member of the *Bolyai János Mathematical Society*, *Hungarian Humboldt Society*, *Hungarian Operations Research Society*, *American Mathematical Society*, *Research Group on Mathematical Inequalities and Applications*, and *Working Group on Generalized Convexity*.
- Editor in Chief of *Alkalmazott Matematikai Lapok*, member of the Editorial Board of 7 international journals in mathematics.
- Organizer of more than 10 international conferences and workshops.
- Chairman of the Chair of Analysis between 1994-2001 and director of the Institute of Mathematics and Informatics of the University of Debrecen between 2001-2003.

International collaborations:

- *János Aczél*, *Che Tat Ng*, *John Baker*, *Palianappan Kannappan* (Department of Pure Mathematics, University of Waterloo, Canada)
- *Vera Zeidan* (Department of Applied Mathematics, Michigan State University, USA)
- *Kazimierz Nikodem*, *Miroslaw Adamek*, *Szymon Wasowicz* (Department of Mathematics, University of Bielsko-Biala, Poland)
- *Roman Ger*, *Roman Badora*, *Maciej Sablik*, *Zygfried Kominek*, etc. (Institute of Mathematics, Silesian University, Poland)

Name: Gyula Pap
Year of birth: 1954.
University/College Degrees: MSc in Mathematics (Lajos Kossuth University, Debrecen, 1977)
Qualifications: mathematician
Language competence: English, German, Russian
Current place of employment, position indicated in the posting: University of Debrecen, Faculty of Informatics, Department of Applied Mathematics and Probability Theory, Head of Department, Professor, Vice Dean
Academic degree: Doctor of Sciences in mathematics (given by the Hungarian Academy of Sciences)
Science/Arts Academy fellowship: Research fellowship of the Alexander von Humboldt Foundation (1988-1990), (1995-1996), Széchenyi fellowship (1997-2001), Fulbright research grant (2002-2003)
Honours: Gyula Farkas Prize (1985), Award of the minister of education (1987), György Alexits Prize (1995),
Education activity up to now: (lectures/seminars taught, time spent with teaching); Probability Theory, Stochastic Processes, Financial Mathematics, Statistics, Information Theory; Time spent with teaching: 29 years
Presentation of work experience and achievements: Assistant 1997-1986 Junior Lecturer 1986-1989 Senior Lecturer 1989-1999 Full Professor 1999-
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. Fourier transform of symmetric Gauss measures on the Heisenberg group (2002) Semigroup Forum 64(1), 130-158. 2. Optimal bounds for Cauchy approximations for the winding distribution of planar Brownian motion (2003) J. Theoret. Probab. 16(2), 345-360. (társszerzők: V. Bentkus, M. Yor) 3. General solution of the functional central limit problems on a Lie group (2004) Infin. Dimens. Anal. Quantum Probab. Relat. Top. 7(1), 43-87. 4. Fluctuation limit of branching processes with immigration and estimation of the means (2005) Adv. in Appl. Probab. 37(2), 523-538. (társszerzők: Ispány Márton és Martien van Zuijlen) 5. Fourier transform of Gauss measures on the Heisenberg group (2006) Ann. Inst. H. Poincaré Probab. Statist. 42(5), 607-633. (társszerző: Barczy Mátyás)
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Uniqueness of embedding into a Gaussian semigroup on a nilpotent Lie group (1994) Arch. Math. (Basel) 62(3), 282-288. 2. Asymptotic inference for nearly unstable AR(p) processes (1999) Econometric Theory 15(2), 184-217. (társszerzők: Tjacco van der Meer, Martien van Zuijlen) 3. Convolution hemigroups of bounded variation on a Lie projective group (1999) J. London

[Math. Soc. \(2\)](#) **59(1)**, 369-384. (társszerző: Herbert Heyer)

4. Asymptotic inference for nearly unstable INAR(1) models (2003) [J. Appl. Probab.](#) **40(3)**, 750-765. (társszerzők: Ispány Márton, Martien van Zuijlen)
5. Martingale characterizations of increment processes in a locally compact group (2003) [Infin. Dimens. Anal. Quantum Probab. Relat. Top.](#) **6(4)**, 563-596. (társszerző: Herbert Heyer)

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

Member of the Editorial Board of

- *Publicationes Mathematicae (Debrecen)*,
- *Teaching Mathematics and Computer Science (Debrecen)*
- *Alkalmazott Matematikai Lapok*

International collaborations:

- Universität Tübingen: [Herbert Heyer](#)
- Universität Dortmund: Wilfried Hazod, Michael Voit
- University of Nijmegen: Martien van Zuijlen
- Southern Illinois University at Carbondale: Philip Feinsilver, Gregory Budzban
- Cornell University: [Laurent Saloff-Coste](#)
- University of South Florida: [Arunava Mukherjea](#)
- University of Hull: [Michael S. Bingham](#)

Name: Attila Pethő
Year of birth: 1950
University/College Degrees: MSc Mathematics, Lajos Kossuth University, Debrecen, 1974
Qualifications:
Language competence: German, English, Russian
Current place of employment, position indicated in the posting: Faculty of Informatics, University of Debrecen, full professor, dean
Academic degree: DSc, 1992
Science/Arts Academy fellowship:
<p>Honours:</p> <ul style="list-style-type: none"> • Géza Grünwald Prize, 1978, János Bolyai Mathematical Society, • Prize of the Academy, 1992, Hungarian Academy of Sciences. • Prize of the Farkas Bolyai Foundation, 2000. • Szent-Györgyi Albert Prize, 2004, Ministry of Education
Education activity up to now: (lectures/seminars taught, time spent with teaching); 33 years, lectures in the last 10 years: Theory of algorithms, Cryptography, Mathematical logic, Data compression, Data security,
Presentation of work experience and achievements: I achieved the most important results in the algorithmic theory of Diophantine equations. I worked out methods for the solution of Thue and index form equations, and for the computation of integral points on elliptic curves. I published several papers on the arithmetic theory of recursive sequences, for example I proved that there are only finitely many perfect powers in second order linear recursive sequences. Recently I am interested for the generalizations of radix representations. With coauthors, we found a common generalization of canonical number systems and β -representations. I am also dealing with the mathematical foundation of cryptography, especially with hash functions, pseudo random number generators and identification.
<p>Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught)</p> <p>S. Akiyama and A. Pethő, On canonical number systems, Theor. Comp. Sci., 270 (2002), 921--933.</p> <p>V. Komornik, P. Loretto and A. Pethő, The smallest univoque number is not isolated, Publ. Math. Debrecen 62/3-4 (2003), 429--435.</p> <p>S. Akiyama, T. Borbély, H. Brunotte, A. Pethő and J. Thuswaldner, Generalized radix representations and dynamical systems I, Acta Math. Hungar., 108 (3) (2005), 207 - 238.</p> <p>A. Bérczes and A. Pethő, On norm form equations with solutions forming arithmetic progressions, Publ. Math. Debrecen, 65 (2004), 281-290.</p> <p>K. Gyarmati, A. Sárközy and A. Pethő, On linear recursion and pseudorandomness, Acta Arith., 118 (2005), 359 - 374.</p>
<p>Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)</p> <p>A.Pethő, Perfect Powers in Second Order Linear Recurrences, J. Number Theory, 15 (1982), 5-13.</p> <p>J.P. Bézivin, A. Pethő and A.J. van der Poorten, A full characterization of divisibility sequences Amer. J. Math., 112 (1990), 985-1001.</p>

I. Gaál, A. Pethő and M. Pohst, Simultaneous representation of numbers by a pair of ternary quadratic forms -- with an application to index form equations in quartic fields, *J. Number Theory*, 57 (1996), 90--104.

J. Gebel, A. Pethő and H.G. Zimmer, Computing integral points on elliptic curves, *Acta Arith.* 68 (1994), 171--192.

A. Pethő, *Algebraische Algorithmen*, Vieweg Verlag, 1999.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity: number of publications: 128, number of independent citations: 683

International collaborations:

- Technische Universität Graz, Graz, Ausztria, [I am honorarprofessor], (Prof. Dr. Robert Tichy)
- Montanuniversitat Leoben, Leoben, Ausztria, (Prof. Dr. Peter Kirschenhofer)
- Technische Universität Darmstadt, Darmstadt, Germany, (Prof. Dr. Johannes Buchmann)
- Technische Universität Berlin, Berlin, Germany, (Prof. Dr. Michael Pohst)
- (Universität des Saarlandes, Saarbrücken, Germany, Prof. Dr. Horst Gunter Zimmer)
- Université Louis Pasteur, Strasbourg, France, (Prof. Dr. Maurice Mignotte)
- Tokyo Metropolitan University, Tokyo, Japan, (Prof. Dr. Ken Nakamura)
- Niigata University, Japan (Prof. Shigeki Akiyama)

Name: István Pink
Year of birth: 1973
University/College Degrees: Lajos Kossuth University, 1993-1998
Qualifications: mathematician, mathematics teacher
Language competence: english, german (intermediate)
Current place of employment, position indicated in the posting: Institute of Mathematics, University of Debrecen, assistant lecturer
Academic degree: PhD, 2006
Science/Arts Academy fellowship:
Honours:
Education activity up to now: (lectures/seminars taught, time spent with teaching); I gave lectures in: Algebra, Number Theory, Linear algebra, Discrete Mathematics I spend with teaching 8 hours per week
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. I. Pink and Sz. Tengely, Full powers in arithmetic progressions, Publ. Math. Debrecen 57/3-4, (2000), 535-545. 2. I. Pink, On the differences between polynomial values and perfect powers, Publ. Math. Debrecen 63/3, (2003), 461-472. 3. I. Pink, On the diophantine equation $x^2+(p_1^{z_1}\dots p_s^{z_s})^2=2y^n$, Publ. Math. Debrecen 65/1-2, (2004), 205-213. 4. K. Győry, I. Pink and Á. Pintér, Power values of polynomials and binomial Thue-Mahler equations, Publ. Math. Debrecen 65/3-4, (2004), 341-362. 5. I. Pink, On the diophantine equation $x^2+2^\alpha 3^\beta 5^\gamma 7^\delta=y^n$, Publ. Math. Debrecen, 70/1-2 (2007), 149-166.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
(Scientific/professional public activity, international collaborations: Scientific/professional public activity: International collaborations:

Name: Ákos Pintér
Year of birth: 1967
University/College Degrees: university degree
Qualifications: mathematician
Language competence: English, Russian, Deutsch
Current place of employment, position indicated in the posting: University of Debrecen, associate professor
Academic degree: PhD
Science/Arts Academy fellowship: --
Honours: Pro Scientia Prize (1991), Rényi Prize (1991), Grünwald Prize (1994), Erdős Prize (2005)
Education activity up to now: (lectures/seminars taught, time spent with teaching); Algebra, number theory, linear algebra for mathematicians and teachers, mathematics for economists, (8 hours/week, 16 years with teaching obligation)
Presentation of work experience and achievements: 50 papers in scientific journals, 32 talks and lectures in international conferences
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. M.A.Bennett, K.Győry, M.Mignotte, Á.Pintér, Binomial Thue equations and polynomial powers, <i>Compositio Math.</i> 142 (2006), 1103—1121. 2. M.A.Bennett, K. Győry és Á.Pintér, On the Diophantine equation $1^k + \dots + x^k = y^n$, <i>Compositio Math.</i> 140 (2004), 1417—1431. 3. Győry K., Hajdu L., Pintér Á. és A. Schinzel, Polynomials determined by a few of their coefficients, <i>Indag. Math. N. S.</i>, 15 (2004), 209—221. 4. K. Győry, I. Pink és Á. Pintér, Power values of polynomials and binomial Thue-Mahler equations, <i>Publ. Math. Debrecen</i> 65 (2004), 341—362. 5. M.Jacobson, Á.Pintér, G. Walsh, A computational approach for solving $y^2 = 1^k + \dots + x^k$, <i>Math. Comp.</i> 72 (2003), 2099—2110.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: --- International collaborations: Canada (Gary Walsh, Mike Bennett), France (Michel Waldschmidt), Turkey (Yilmaz Siksek), Australia (Alf van der Poorten)

Name: Csaba Rakaczki
Year of birth: 1976
University/College Degrees: mathematician
Qualifications:
Language competence: intermediate English (ESOL)
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, assistant
Academic degree: PhD
Science/Arts Academy fellowship:
Honours: 1999, Kató Rényi medallion; 2006 Géza Grünwald medallion
Education activity up to now: (lectures/seminars taught, time spent with teaching); Lectures: Elementary mathematics, Biomathematics, Linear algebra I, II, Power sums and polynomials Seminars: Linear algebra I, II, Algebra I, II, Discrete mathematics I, II, Number Theory, Biomathematics, Introduction to the algebra and the number theory
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) 1. Cs. Rakaczki On the diophantine equation $x(x-1)\cdots(x-(m-1))=\lambda y(y-1)\cdots(y-(n-1))+k$, Acta Arith. 110.4 (2003), 339-360. 2. Cs. Rakaczki On the diophantine equation $F\left(\begin{matrix} x \\ n \end{matrix}\right)=b\left(\begin{matrix} y \\ m \end{matrix}\right)$. Periodica Math. Hung. 49(2) , (2004), 119-132. 3. Cs. Rakaczki On the Diophantine equation $S_m(x)=g(y)$, Publ. Math. 65 / 3-4 , (2004), 439-460. 4. Cs. Rakaczki Diophantine results connected with binomial coefficients and power sums (PhD thesis) University of Debrecen, Debrecen, 2005. 5. Á. Pintér and Cs. Rakaczki, On diophantine equations related to Bernoulli polynomials, Appl. Math. Comput. 2007 (to appear).
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: International collaborations:

Name: László Székelyhidi
Year of birth: 1952
University/College Degrees: MSc in Mathematics
Qualifications: Mathematician, English-Hungarian scientific translator
Language competence: Hungarian, English, German, Russian
Current place of employment, position indicated in the posting: University of Debrecen, Institute of Mathematics, Professor
Academic degree: Doctor of Academy
Science/Arts Academy fellowship:
Honours: Kató Rényi Prize (1974), Géza Grünwald Honorary Prize (1980), György Alexits Prize (1991), Academic Prize (2006), Széchenyi Professorship (1997-2000)
Education activity up to now: (lectures/seminars taught, time spent with teaching); Teaching experience: undergraduate, graduate and postgraduate courses in Elementary Mathematics, Calculus I., II., III., Differential Equations, Real Analysis, Complex Function Theory, Calculus of Variations, Measure Theory, Approximation Theory, Functional Analysis, Partial Differential Equations, Theory of Distributions, Integral Transforms, Functional Equations, C^* -algebras, Abstract Harmonic Analysis (University of Debrecen - former Lajos Kossuth University, Debrecen); Elementary Mathematics, Calculus I., II., III., IV., Complex Function Theory, Linear Algebra, Differential Equations, Real Analysis (Kuwait University, Kuwait); Probability Theory and Statistics, Calculus I., II., III. (Janus Pannonius University, Pécs); Calculus II. (University of Louisville); Calculus I., III. (Mississippi State University); Precalculus, Calculus I. (Sultan Qaboos University) Time spent with teaching: 30 years.
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. P. K. Sahoo and L. Székelyhidi, <i>On the General Solution of a Functional Equation on ZLZ</i>, Arch. Math., vol. 81, pp. 233-239, 2003. 2. The failure of spectral synthesis on some types of discrete Abelian groups, Jour. Math. Anal. Appl. vol. 291, pp. 757-763, 2004. 3. Spectral Analysis and Spectral Synthesis on Polynomial Hypergroups, Monatshefte Math. vol. 141, no. 1, pp. 33-43, 2004. 4. B. Ebanks and L. Székelyhidi, <i>On multiplicative Cauchy-differences</i>, Aequationes Math., vol. 69, pp. 97-113, 2005. 5. L. Székelyhidi, <i>Discrete Spectral Synthesis and Its Applications</i>. Springer Monographs in Mathematics, Springer Dordrecht, The Netherlands 2006.
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) <ol style="list-style-type: none"> 1. Stability of the sine and cosine equations, Proc. Amer. Math. Soc., vol. 110, no. 1, pp. 109-115, 1990. 2. Stability Properties of Functional Equations Describing the Scientific Laws, Jour. Math. Anal.

Appl., vol. 150, no. 1, pp. 151-158, 1990.

3. Convolution type functional equations on topological abelian groups, Teaneck, NJ: World Scientific Publishing Co. Inc., 1991.
4. The failure of spectral synthesis on some types of discrete Abelian groups, Jour. Math. Anal. Appl. vol. 291, pp. 757-763, 2004.
5. L. Székelyhidi, Discrete Spectral Synthesis and Its Applications. Springer Monographs in Mathematics, Springer Dordrecht, The Netherlands 2006.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

International collaborations: Austria, Canada, Germany, Oman, Switzerland, USA

Name: Szabolcs Tengely
Year of birth: 1976
University/College Degrees: mathematician
Qualifications:
Language competence: English, Hungarian
Current place of employment, position indicated in the posting: University of Debrecen, Mathematical Institute, Zoltan Magyary Postdoctoral Fellow
Academic degree: PhD
Science/Arts Academy fellowship:
Honours:
Education activity up to now: (lectures/seminars taught, time spent with teaching); Magma, Applied algebra, Linear algebra 1-2, Combinatorics and graph theory, Elementary Mathematics 1-2, Discrete Mathematics 1-2, Caleidoscoop (in English), Calculus 2 (in English), Algebra, Number Theory.
Presentation of work experience and achievements:
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) On the Diophantine equation $x^2+q^{2m}=2y^p$, Acta Arith. 127 (2007) 71-86. Arithmetic progressions consisting of unlike powers, Indag. Math. (N.S.) 17 (2006), 539-555. On the Diophantine equation $x^2+a^2=2y^p$, Indag. Math. (N.S.) 15 (2004), 291-304. On the Diophantine equation $F(x)=G(y)$, Acta Arith. 110 (2003), 185-200. Effective Methods for Diophantine Equations, (Ph.D. thesis, Leiden University, The Netherlands, 2005).
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)
Scientific/professional public activity, international collaborations: Scientific/professional public activity: International collaborations: Leiden University (Prof.dr. Robert Tijdeman) University of Warwick (Prof.dr. Samir Siksek)

Name: Sándor Turjányi
Year of birth: 1948
University/College Degrees: university studies
Qualifications: : mathematics and descriptive geometry teacher, Lajos Kossuth University
Language competence: English (intermediate)
Current place of employment, position indicated in the posting: Institute of Mathematics, University of Debrecen, assistant professor
Academic degree: university doctor degree
Science/Arts Academy fellowship: ---
Honours: Kató Rényi Memory Prize
Education activity up to now: (lectures/seminars taught, time spent with teaching); Algebra, Combinatorics and Graph Theory, Discrete Mathematics, Linear Algebra, Mathematical logic, Number Theory, Set Theory
Presentation of work experience and achievements: Basis sequences were studied. Many prime values of polynomials were examined.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <u>Ruzsa, Imre Z.</u> ; Turjányi, S., Remarks on prime values of polynomials at prime arguments. (English) [J] <u>Publ. Math.</u> 62, No.3-4, 589-600 (2003). [ISSN 0033-3883], Turjányi S. Combinatorics and Graph Theory, elektronik lecture note, in hungarian
Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above) 1;Turjányi, S., On maximal asymptotic nonbases of zero density, J.Number Theory, 9 (1977), 271-275. 2;Turjányi, S., Note on maximal asymptotic nonbases of zero density, Publ. Math. (Debrecen) 26 (1979),229-235. 3;Turjányi, S., A note on basis sequences,Colloquia Math.Soc.J.Bolyai,34. Topics in Classical Number Theory Budapest, (1981) 1571-1575. 4; Brindza,B. ,Pintér,Á. and Turjányi, S., On equal values of pyramidal and polygonal numbers, Indagationes Mathem., N.S., 9(2),(1998),183-185 5; <u>Ruzsa, Imre Z.</u> ; Turjányi, S., Remarks on prime values of polynomials at prime arguments. (English) [J] <u>Publ. Math.</u> 62, No.3-4, 589-600 (2003). [ISSN 0033-3883
Scientific/professional public activity, international collaborations: Scientific/professional public activity: Reviewer in <u>Zentralblatt für Mathematik</u> and <u>Mathematical Reviews</u> International collaborations:

Name: Magda Várterész
Year of birth: 1954
University/College Degrees: MSc (in Mathematics)
Qualifications: MSc in Mathematics
Language competence: Hungarian (mother tongue), English (intermediate), Russian (intermediate)
Current place of employment, position indicated in the posting: Faculty of Informatics at the University of Debrecen Associate Professor at the Department of Computer Science
Academic degree: Ph.D.
Science/Arts Academy fellowship: no
Honours: no
Education activity up to now: (lectures/seminars taught, time spent with teaching); <i>Lectures/seminars taught:</i> mathematical logic, artificial intelligence <i>Time spent with teaching:</i> 30 years
Presentation of work experience and achievements: <i>Numerical methods:</i> For solving nonlinear equations, the iteration generated by tangential convex functions is a well-known approach. Generalizing these iterations, a function family consisting of the basic iteration functions has been built, whose members can be obtained by the help of tangential convex functions providing always convergent methods. Later, I elaborated higher-order convergence methods for some Newton-like interval iterations. In order to do this, I took first a class of functions for which these methods behave particularly well. The next task was to mold a given function into a new one in such a way that the roots remain unchanged. It has been proved nearly linear in a neighborhood of the root, so the convergence of these methods could be really accelerated. <i>Mathematical logic:</i> At a first sight, theorem proving methods appear as if they were very different. For the last ten years several researchers have examined the relationship between these algorithms. The motivation of these efforts is the demand on a unified treatment of logic. The logic operations have been classified into two main classes, so the deduction rules could be examined according to this classification. The duality property of the main operations can be utilized in the methods of automated reasoning. It seemed to be useful to give a more detailed analysis of these important algorithms. The unified treatment allowed us to develop some general algorithms for handling these problems.
Professional, scientific (artistic) work of the past five years: (listing the most important <i>maximum 5</i> publications connected to the professional field of subject/subjects taught) <ol style="list-style-type: none"> 1. K. Pásztor Varga, M. Várterész: Comparison and usability of rewriting systems for theorem proving, <i>Pure Mathematics and Applications (Budapest-Siena)</i>, 13 (2002) 293-302. 2. K. Pásztor Varga, M. Várterész: Mathematical logic (an application oriented approach), (in Hungarian), <i>Panem Kiadó (Budapest)</i>, 2003, 1-394. 3. K. Pásztor Varga, M. Várterész: Usability of some Theorem Proving Systems, <i>Pure Mathematics and Applications (Budapest-Siena)</i>, 2004. 4. K. Pásztor Varga, M. Várterész: Computer Science, Logic, Informatics Education, <i>JUCS</i>, 2005.

5. K. Pásztor Varga, M. Várterész: Languages of Logic and its Applications, Mathematical and Computer Modeling (Elsevier Ltd.),(accepted).

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

1. M. Várterész: Iterations generated by tangential convex functions for solving equations (in Hungarian), Matematikai Lapok (Budapest), 19 (1998) 219-235.
2. M. Várterész: Accelerated convergence in Newton-like methods, Journal of Mathematical Sciences (New York), 103 (2001) no.4, 529-532.
3. K. Pásztor Varga, M. Várterész: A generalized approach to the theorem proving methods, 5th International Conference on Applied Informatics (Eger), (2001), 191-200.
4. K. Pásztor Varga, M. Várterész: Comparison and usability of rewriting systems for theorem proving, Pure Mathematics and Applications (Budapest-Siena), 13 (2002) 293-302.
5. K. Pásztor Varga, M. Várterész: Mathematical logic (an application oriented approach), (in Hungarian), Panem Kiadó (Budapest), 2003, 1-394.

Scientific/professional public activity, international collaborations:

Scientific/professional public activity:

- Member of the Committee of Computer Science of Department of Mathematics in Hungarian Academy of Sciences (2002-)
- Secretary of the PhD School for Mathematics and Computer Science (2002-)

International collaborations:

- Univ. Babes-Bolyai, Cluj-Napoca, (J. Robu)
- Univ. Sapientia, Targu-Mures (L. David)
- Univ. Hamburg (M. Kudlek)

Name: Csaba Vincze
Year of birth: 1971
University/College Degrees: University of Debrecen, PhD, mathematics, 2001
Qualifications: teacher of mathematics and philosophy
Language competence: English
Current place of employment, position indicated in the posting: University of Debrecen, Math. Int. Department of Geometry
Academic degree:
Science/Arts Academy fellowship:
Honours: <ol style="list-style-type: none"> 1. Fellowship, Hungarian Scientific Research Fund Programs, 2006 2. Fellowship, of the Hungarian Academy of Sciences, Budapest (Hungary), 2002-2005, 3. Prize for young researchers, Hungarian Academy of Sciences, Regional Committee in Debrecen, 2004 4. Prize for young researchers, Hungarian Academy of Sciences, Regional Committee in Debrecen, 1999 5. Commemorative medallion of Géza Grünwald, The János Bolyai Mathematical Society, 1999
Education activity up to now: (lectures/seminars taught, time spent with teaching); Period Subject (Lectures, 2 hours/ week) 2006/07/2 Geometry I BSC 2006/07/2, 2005/06/2, 2003/04/2, 2002/03/2 Vector analysis 2006/07/1, 2001/02/2, 2000/01/2 Convex Geometry 2006/07/1 Trigonometry and Coordinate Geometry BSC 2005/06/1, 2004/05/1, 2003/04/1, 2002/03/1, 2001/02/1 Geometry (3 hours/week) 2005/06/1, 2004/05/1 Geometry i. 2005/06/2, 2004/05/2, 2003/04/2 Geometry ii. 2003/04/2 Differential Geometry Period Subject (Seminars, 2 hours/ week) 2006/07/2 Geometry I BSC 2006/07/1 Trigonometry and Coordinate Geometry 2005/06/2, 2004/05/2 Elementary mathematics 2 (3 hours/week) 2005/06/1, 2004/05/1, 2003/04/1, 2002/03/1, 2001/02/1, Geometry 2005/06/1, 2004/05/1, 2002/03/1 Geometry i 2005/06/2, 2004/05/2, 2003/04/2, 2002/03/2, 2001/02/2, 2000/01/2 Geometry ii 2003/04/2 Differential Geometry 2002/03/2 Differential Geometry 1. 2001/02/1 Linear algebra 1 2001/02/2 Linear algebra 2 2000/01/1 Calculus 1. (4 hours/week) Faculty of Economics 2000/01/1, 2003/04/1, 2004/05/1 Mathematics 1. (4 hours/ week)
Presentation of work experience and achievements:
Education:

- Lajos Kossuth University, Debrecen (Hungary) M.Sc. 1996, Mathematics and Philosophy,
- Lajos Kossuth University, Debrecen (Hungary), Ph.D. 2001, Mathematics

Academic Honours:

- Fellowship, Hungarian Scientific Research Fund Programs, 2006
- Fellowship of the Hungarian Academy of Sciences, Budapest (Hungary), 2002-2005,
- Prize for young researchers, Hungarian Academy of Sciences, Regional Committee in Debrecen, 2004
- Prize for young researchers, Hungarian Academy of Sciences, Regional Committee in Debrecen, 1999
- Commemorative medallion of Géza Grünwald, The János Bolyai Mathematical Society, 1999

Employment :

- 2000 - Lajos Kossuth University, Debrecen (Hungary),
- 1999 - 2000 Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest (Hungary),
- 1996 - 1999 Ph.D. Student, Lajos Kossuth University, Debrecen (Hungary)

Professional, scientific (artistic) work of the past five years: (listing the most important *maximum 5* publications connected to the professional field of subject/subjects taught)

1. Vincze, Cs. On geometric vector fields of Minkowski spaces and their applications. *Differential Geom. Appl.* **24** (2006), no. 1, 1--20.
2. Vincze, Cs. *On an existence theorem of Wagner manifolds*, Indag. Math., Vol 17 (1), 2006, 129-145.
3. Vincze, Cs. A new proof of Szabó's theorem on the Riemann-metrizability of Berwald manifolds. *Acta Math. Acad. Paedagog. Nyházi. (N.S.)* 21 (2005), no. 2, 199--204 (electronic).
4. Vincze, Cs. On a scale function for testing the conformality of a Finsler manifold to a Berwald manifold. *J. Geom. Phys.* 54 (2005), no. 4, 454--475.
5. Vincze, Cs. On conformal equivalence of Berwald manifolds all of whose indicatrices have positive curvature. *SUT J. Math.* 39 (2003), no. 1, 15--40.

Listing of the 5 most important publications or creations from the point of view of the scientific-professional life-achievement: (if different from the above)

Scientific/professional public activity, international collaborations: Participation at conferences.

1. The 3rd International Workshop on Diff. Geom. and its Appl., 18-23 September, 1997, Sibiu, Romania
2. The 18th Winter School Geom. and Phys., 10-17 January, 1998, Srni, Czech Republic
3. The 20th Winter School Geom. and Phys., 15-22 January, 2000, Srni, Czech Republic
4. The 11th National Seminar on Finsler and Lagrange Geometry, 17-20 February, 2000, Bacau, Romania
5. The 8th International Conference on Diff. Geom. and its Appl., 27-31 August, 2001, Opava, Czech Rep.
6. Debrecen – Opava Meeting 2002, 24-25 May, 2002, Debrecen, Hungary
7. The 34th Symposium on Mathematical Physics, 14-18 June, 2002, Torun, Poland
8. Olomouc-Debrecen Meeting, 3rd Workshop on Diff. Geom., 16-18 October, 2003, Olomouc, Czech Rep.
9. 2004 International Symp. on Finsler Geometry, 2-14 August, 2004, Tianjin, China
10. Differential Geometry and Physics, 29 August – 2 September, 2005, Budapest, Hungary
11. Applied Complex and Quaternionic Approximation vs. Finslerian Structures, 18-25 July 2006, Bedlewo, Poland
12. Finsler extension of Relativity theory, 4-10 November, 2006, Cairo, Egypt.

Nyilatkozat arról, hogy

csak a Debreceni Egyetemen állok alkalmazásban teljes munkaidős oktatói, tudományos kutatói munkakörben.

.....
Dr. Herendi Tamás

.....
Dr. Muzsnay Zoltán

Debrecen, 2007. május 5.