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Antal Bege (1962–2012)

Our colleague, friend, editor-in-chief of Acta Universitatis Sapientiae, associate professor Antal Bege passed away unexpectedly on March 22, 2012. He was only 49.

After finishing his studies in Mathematics at Babeş-Bolyai University in Cluj he became a teacher in his former school in Miercurea Ciuc. After the regime change in 1989 he joined the Faculty of Mathematics and Computer Science, at Babeş-Bolyai University. He worked there for almost two decades, then went over to Sapientia Hungarian University of Transylvania, Department of Mathematics and Informatics in Târgu-Mureş in 2008. This is where he became the head of the department and the editor-in-chief of the academic journal Acta Universitatis Sapientiae. Naturally, he did his best in all these qualities.

Among his research interests we can mention Number Theory (arithmetical functions), Nonlinear Analysis and Discrete Mathematics. He published 13 textbooks and monographs both in Hungarian and Romanian, as well as a lot of scientific papers.

He was extremely evenhanded person, appreciated by all his colleagues and students, a man of poise and an eternal stayer. With a terrible feeling of pain and loss, we say goodbye to our friend. We shall treasure his memory.

Editorial Board

Antal Bege's publications

Books

1. A. Bege, Z. Kása, L. Tóth, *Relációk és alkalmazásaiak (Relations and applications – in Hungarian)*, Műegyetemi Kiadó, Budapest, 1999, 71 p.
2. A. Bege, *Diszkrét matematika (Discrete mathematics – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2009, ISBN 978-973-610-880-8, 175 p.
3. A. Bege, *Differenciálegyenletek – gyakorlatok és feladatok, (Problems and exercises in differential equations – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2008, ISBN 978-973-610-723-8, 191 p.
4. A. Bege, *238 válogatott számelméleti feladat (238 selected problems in number theory – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2008, ISBN 978-973-610-735-1, 203 p.
5. A. Bege, *Rekurzív sorozatokkal kapcsolatos feladatok (Problems with recurrences – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2007, ISBN 978-973-610-560-9, 152 p.
6. A. Bege, *Skatulyaelvvel kapcsolatos feladatok (Problems with pigeonhole principle – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2007, ISBN 978-973-610-562-3, 129 p.
7. A. Bege, *Régi és új számelméleti függvények (Old and new number theoretical functions – in Hungarian)*, Scientia Kiadó, Kolozsvár, 2006, ISBN 10973-7953-62-2, 115 p.
8. A. Bege, Z. Kása, *Algoritmikus kombinatorika és számelmélet (Algorithmic combinatorics and number theory – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2006, ISBN 10973-610-446-X, 215 p.
9. A. Bege, *Differenciaegyenletek (Difference equations – in Hungarian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2005, ISBN 973-610-346-3, 228 p.
10. A. Bege, *Teoria discretă a punctului fix (Discrete theory of fix points – in Romanian)*, Editura Presa Universitară Clujeană, Cluj-Napoca, 2002, ISBN 973-610-084-7, 181 p.
11. A. Bege, *Bevezetés a számelméletbe (Introduction to number theory – in Hungarian)*, Scientia Kiadó, Kolozsvár, 2002, ISBN 973-85750-3, 198 p.

12. A. Bege, A. Demeter, A. Lukács, *Számelméleti feladatgyűjtemény* (*Number theoretical problems – in Hungarian*), Scientia Kiadó, Kolozsvár, 2002, ISBN 973-85422-7-8, 156 p.
13. Z. Kása, A. Bege, *Matematica discretă* (*Discrete mathematics – in Romanian*), Univ. Babes-Bolyai, Cluj-Napoca, 2002, 102 p.

Scientific papers

14. A. Bege, Generalized LCM matrices, *Publ. Math. Debrecen* **79** (2011), 309–315.
15. A. Bege, A generalization of Apostol’s Möbius functions of order k , *Publ. Math. Debrecen* **58** (2001) 293–301.
16. A. Bege, Generalized GCD matrices, *Acta Univ. Sapientiae Math.* **2** (2010) 160–167.
17. A. Bege, Generalized Möbius-type functions and special set of k -free numbers, *Acta Univ. Sapientiae Math.* **1** (2009) 143–150.
18. A. Bege, Hadamard product of GCD matrices. *Acta Univ. Sapientiae Math.* **1** (2009) 43–49.
19. A. Bege, K. Fogarasi, Generalized perfect numbers. *Acta Univ. Sapientiae Math.* **1** (2009) 73–82.
20. J. Sándor, A. Bege, The Möbius function: generalizations and extensions, *Adv. Studies in Cont. Math.* **6** (2003), 77–128.
21. A. Bege, On multiplicatively bi-unitary perfect numbers, *Notes Number Theory Discrete Math.* **8** (2002) 28–36.
22. A. Bege, Fixed point theorems in ordered sets and applications, *Seminar on Fixed Point Theory* **3** (2002) 129–136.
23. A. Bege, Fixed points of R-contractions, *Studia Univ. Babeş-Bolyai Math.* **47** (2002) 19–25.
24. A. Bege, Z. Kása, Coding objects related to Catalan numbers, *Studia Univ. Babeş-Bolyai Inform.* **46** (2001) 31–40.
25. A. Bege, On multiplicatively unitary perfect numbers, *Seminar on Fixed Point Theory* **2** (2001) 59–64.

26. A. Bege, C. Iancu, D. V. Ionescu and "Gazeta matematica", in: *Mathematical contributions of D. V. Ionescu*, Edited by Ioan A. Rus, Babeş-Bolyai University, 2001, 95–100.
27. A. Bege, About difference-differential equations which appear in number theory, *Seminar on Fixed Point Theory* **1** (2000) 9–13.
28. A. Bege, Some discrete fixed point theorems, *Studia Univ. Babeş-Bolyai Math.* **45** (2000) 31–37.
29. A. Bege, The generalization of fixed point theorems in ultrametric spaces, *Studia Univ. Babeş-Bolyai Math.* **41** (1996) 17–21.
30. A. Bege, Two asymptotic formulas related to bi-unitary divisors, *Notes Number Theory Discrete Math.* **2** (1996) 7–14.
31. A. Bege, Fixed points of certain divisor function, *Notes Number Theory Discrete Math.* **1** (1995) 43–44.
32. A. Bege, Some remarks concerning fixed points in partially ordered sets, *Notes Number Theory Discrete Math.* **1** (1995) 142–145.
33. A. Bege, O inegalitate cu media generalizata a lui Stolarsky, *Lucr. Semin. Didact. Mat.* **8** (1992) 17–22.
34. A. Bege, Triunitary divisor functions, *Studia Univ. Babeş-Bolyai Math.* **37** (1992) 3–7.
35. A. Bege, D. M. Milosevic, Some inequalities for a triangle, *Mathematica (Cluj)* **34 (57)** (1992) 99–105.
36. A. Bege, Some generalized contractions in metric spaces, *Seminar on Fixed Point Theory* **91-3**, 1–6.
37. A. Bege, A generalization of von Mangoldt's function, *Bull. Number Theory Related Topics* **14** (1990) 73–78.
38. A. Bege, A note on a generalization of an arithmetical function, *Bull. Number Theory Related Topics* **14** (1990) 68–70.
39. A. Bege, D. M. Milosevic, Recent advances in triangle inequalities, *Studia Univ. Babeş-Bolyai Math.* **35** (1990), 61–67.
40. A. Bege, A note on a sum of one arithmetical function, *Bull. Number Theory Related Topics* **12** (1988) 116–120.

41. Bartha Zs., Bege A., Hyperperfect numbers and generalizations, *8th Joint Conf. on Math. and Computer Science, MACS 2010*, July 14–17, 2010, Komárno, Selected Papers, Novadat (Budapest) pp. 15–22. ISBN 978-963-9056-38-1
42. A. Bege, Existence and uniqueness of the solution for a boundary value problem, *Proceedings of the "Tiberiu Popovciu" itinerant seminar of functional equations, approximation and convexity*, 2000, 29–36.

Other papers

43. A. Bege, Erdős Pál és a KÖNYV (P. Erdős and the BOOK – in Hungarian), *MatLap (Kolozsvár)* 2001/5 326–329.
44. A. Bege, A tökéletes számoktól a barátságos számokig (From perfect numbers to friendly numbers – in Hungarian), *MatLap (Kolozsvár)* 2000/4, 87–89.
45. A. Bege, Numere exponentiale perfecte (Exponential perfect numbers – in Romanian), *Didactica Matematicii (Cluj-Napoca)* 1994/4, 35–38.
46. A. Bege, Asupra unei inegalități geometrice (On a geometric inequality – in Romanian), *Didactica Matematicii (Cluj-Napoca)* **9** (1994) 39–40.
47. A. Bege, A hamis zsákok nyomában (In the train of counterfeit bags – in Hungarian), *KÖMAL (Budapest* **38** (1988) 97–99.

PhD Thesis

48. A. Bege, *Teoreme discrete de punct fix și aplicații (Discrete fixpoint theorems with applications)*, Universitatea Babeș-Bolyai, Cluj-Napoca, 2000. Scientific adviser: Prof. dr. Ioan A. Rus.

Book editing

49. H. F. Pop, A. Bege (eds.), *8th Joint Conference on Mathematics and Computer Science MacS 2010, Selected papers*, Novadat, Győr, Hungary, 2011, 416 p. ISBN 978-963-9056-38-1.

Translation

50. D. E. Knuth, *A számítógép-programozás művészete, 4. kötet 3. rész: Kombinációk és particiók előállítása* (The Art of Computer Programming, vol. 4. Fasc. 3. Generating all combinations and partitions), (with L. Lóczsi, L. Szalay, M. Szalay) Ed. A. Iványi, AnTonCom, Budapest, 2008. ISBN 978-963-87947-2-7.

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