

List of Publications

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1. In preparation

1. B. Bede, Two-point Boundary Value Problems for Interval Differential Equations.
2. B. Bede, L. Stefanini, Interval Analysis, with generalized Hukuhara difference and differentiability.
3. B. Bede, L. Stefanini, Difference-based generalizations of the differentiability of fuzzy-valued functions.
4. B. Bede, L. Stefanini, Generalized Hukuhara differentiability of set-valued functions and set differential equations
5. B. Bede, H. Nobuhara, Fast Image Coding by new Max-Plus Algebra based wavelets
6. B. Bede, D. O'Regan, The Theory of Pseudo-linear Operators
7. B. Bede, C. Gal, S. G. Gal, Semigroups of Operators on spaces of fuzzy-number-valued functions with strongly generalized differentiability
8. B. Bede, L. Coroianu, SG. Gal, Approximation by nonlinear Approximation Operators of Max-Plus kind.

2. Submitted

1. I. Perfilieva, M. Dankova, B. Bede, Towards higher order fuzzy transforms.
2. B. Bede, I.J. Rudas, Approximation properties of Fuzzy Transforms.
3. B. Bede, L. Coroianu, SG. Gal, Approximation and Shape Preserving Properties of the Nonlinear Favard-Szasz-Mirakjan Operator of Max-Product Kind

3. Peer Reviewed Journals

1. B. Bede, L. Coroianu, SG. Gal, Approximation and shape preserving properties of the nonlinear Bleimann-Butzer-Hahn operators of max-product kind, Comentiones Mathematica Universita Carolinae, accepted.
2. B. Bede, L. Coroianu, SG. Gal, Approximation by Truncated Favard-Szasz-Mirakjan Operator of Max-Product Kind, Demonstratio Mathematica, accepted.

3. B. Bede, L. Coroianu, SG. Gal, Approximation and Shape Preserving Properties of the nonlinear Baskakov Operator of Max-Product Kind, Studia Univ. Babeş-Bolyai, accepted.
4. T. Tanabata, K. Sawase, H. Nobuhara, B. Bede, Experimental attribute discretization of formal concept analysis for huge image database visualization, Journal of Advanced Computational Intelligence and Intelligent Informatics, accepted.
5. H. Nobuhara, D.B.K. Trieu, T. Maruyama, B. Bede, Max-Plus Algebra Based Wavelet Transforms and Their FPGA Implementation for Image Coding, Information Sciences, accepted.
6. B. Bede, L. Coroianu, SG. Gal, Approximation and Shape Preserving Properties of the Nonlinear Meyer-Konig and Zeller Operator of Max-Product kind, Numerical Functional Analysis and Optimization, 31(2010) 232–253.
7. B. Bede, S.G. Gal, Solutions of fuzzy differential equations based on generalized differentiability, Communications in Mathematical Analysis, 9(2010), 22–41.
8. B. Bede, SG. Gal, Approximation by Nonlinear Bernstein and Favard-Szasz-Mirakjan Operators of Max-Product Kind, Journal of Concrete and Applicable Mathematics, 8(2010) 193-207.
9. B. Bede, L. Coroianu, SG. Gal, Approximation and Shape Preserving Properties of the Bernstein Operator of Max-Product Kind, International Journal of Mathematics and Mathematical Sciences, Volume 2009 (2009), Article ID 590589, doi:10.1155/2009/590589
10. L. Stefanini, B. Bede, Generalized Hukuhara differentiability of interval-valued functions and interval differential equations, Nonlinear Analysis: Theory, Methods & Applications, 71(2009), 1311-1328.
11. B. Bede, E.D. Schwab, H. Nobuhara, I.J. Rudas, Approximation by Shepard type pseudo-linear operators and applications to Image Processing, International Journal of Approximate Reasoning, 50(2009), 21-36.
12. B. Bede, Note on "Numerical solutions of fuzzy differential equations by predictor-corrector method", Information Sciences, 178(2008), 1917-1922.
13. B. Bede, H. Nobuhara, M. Dankova, A. Di Nola, Approximation by using pseudo-linear operators, Fuzzy Sets and Systems, 159(2008), 804-820.
14. B. Bede, G.B. Tenali, V. Lakshmikantham, Perspectives of Fuzzy Initial Value Problems, Communications in Applied Analysis, 11(2007) 339-358.
15. B. Bede, I. J. Rudas and J. Fodor , Friction Model by Using Fuzzy Differential Equations, Lecture Notes in Computer Science, 4529(2007), 23-32.

16. M. Ceberio, V. Kreinovich, A. Pownuk and B. Bede, From Interval Computations to Constraint-Related Set Computations: Towards Faster Estimation of Statistics and ODEs Under Interval, p-Box, and Fuzzy Uncertainty, *Lecture Notes in Computer Science*, 4529(2007), 33-42.
17. B. Bede, I.J. Rudas, A.L. Bencsik, First Order Linear Fuzzy Differential Equations under Generalized Differentiability, *Information Sciences*, 177(2007), 1648-1662.
18. B. Bede, A note on "Two-point boundary value problems associated with non-linear fuzzy differential equations", *Fuzzy Sets and Systems*, 157(2006), 986-989.
19. H. Nobuhara, B. Bede, K. Hirota, On Various Eigen Fuzzy Sets and Their Application to Image Reconstruction, *Information Sciences*, 176 (2006), 2988-3010.
20. A. Di Nola, B. Bede, Image File Compression Using Approximation and Fuzzy Logic, *Lecture Notes in Artificial Intelligence* 2955 (2006), 200–207.
21. A. Di Nola, N. Paladino, B. Bede, Image file compression using region growing and interpolation, *Lecture Notes in Computer Science*, 3931 (2006), 188-196.
22. B. Bede, H. Nobuhara, J. Fodor, K. Hirota, Max-Product Shepard Approximation Operators, *Journal of Advanced Computational Intelligence and Intelligent Informatics*, 10 (2006), 494-497.
23. P. Blaga, B. Bede, Approximation by fuzzy B-spline series, *Journal of Applied Mathematics and Computing*, 20 (2006), pp. 157-169.
24. A. Ban, B. Bede, Properties of the cross product of fuzzy numbers, *Journal of Fuzzy Mathematics*, 14 (2006), 513-531.
25. A. Ban, B. Bede, Power series of fuzzy numbers with cross product and applications to fuzzy differential equations, *Journal of Concrete and Applicable Mathematics*, 4(2006), 125-152.
26. J. Gáti, B. Bede, Variation diminishing spline approximation of fuzzy functions, *WSEAS Transactions on Mathematics* 5 (2006), pp. 48-53.
27. B. Bede, J. Fodor, Product type operations between fuzzy numbers and their applications in geology, *Acta Polytechnica Hungarica*, 3(2006), 123-139.
28. B. Bede, S.G. Gal, Generalizations of the Differentiability of Fuzzy-Number-Valued Functions with Applications to Fuzzy Differential Equations, *Fuzzy Sets and Systems* 151(2005) 581-599.

29. B. Bede, G. Iovane, I. Esposito, Fuzzy Fourier transforms and their applications to fingerprint coding, *Journal of Discrete Mathematical Sciences & Cryptography*, 8(2005), 59-79.
30. Bede, S.G. Gal, Almost periodic fuzzy-number-valued functions, *Fuzzy Sets and Systems* 147(2004), 385-403.
31. B. Bede, S.G. Gal, Quadrature Rules for Fuzzy-Number-Valued Functions, *Fuzzy Sets and Systems* 145(2004), 359-380.
32. B. Bede, A. Di Nola, Elementary calculus in Riesz MV-algebras, *International Journal of Approximate Reasoning*, 36(2004), 129-149.
33. B. Bede, S.G. Gal, Best Approximation and Jackson-Type Estimates for Fuzzy-Number-Valued Functions, *Journal of Concrete and Applicable Mathematics*, 2(2004), 213-232.
34. H. Nobuhara, K. Hirota, B. Bede, Decomposition of fuzzy relation based on multiresolution scheme, *Fuzzy Systems & AI*, 10(2004), 43-54.
35. B. Bede, H. Nobuhara, K. Hirota, A. Di Nola, V. Loia, Max t-norm Approximation Operators and Applications in Image Processing, *WSEAS Transactions on Information Sciences and Applications*, 1(2004), 1551-1556.
36. D. Noje, B. Bede, Vectorial MV-algebras, *Soft Computing* 7 (2003), 258-262.
37. A. Ban, B. Bede, Cross product of L-R fuzzy numbers and applications, *Annals of the University of Oradea, Fasc. Matem.* 9(2003), 95-108.
38. D. Noje, B. Bede, The MV-Algebra Structure of RGB-model, *Studia Univ. Babeş-Bolyai, Informatica*, XLVI, 1(2001), 77-86.

4. Book Chapters

1. K. Sawase, H. Nobuhara, B. Bede, Visualizing Huge Image Databases by Formal Concept Analysis, in *Studies in Computational Intelligence, Human-Centric Information Processing Through Granular Modelling* (Andrzej Bargiela and Witold Pedrycz (Eds.)) Springer, 2009, pp 351-374.
2. H. Nobuhara, B. Bede, Multi-channel Representations of Max-Plus Algebra Based Wavelet Transform and Their Application to Video Coding, *Studies in Computational Intelligence, Soft Computing Based Modeling in Intelligent Systems*, (Valentina Emilia Balas, Janos Fodor, and Annamaria R.Varkonyi-Koczy (Eds.)), Springer, 2009, pp. 133-144.

5. Peer Reviewed Conference Proceedings

1. B. Bede, H. Nobuhara, Non-negative matrix factorization and decomposition of a fuzzy relation, World Congress of Computational Intelligence, July, 2010, accepted.
2. B. Bede, H. Nobuhara, A novel Max-Plus algebra based wavelet transform and its applications in Image Processing, IEEE International Conference on Systems Man and Cybernetics, San Antonio Texas, October 11-14 2009.
3. B. Bede, I.J. Rudas, Fuzzy Transforms, Korovkin Theorems and the Durrmeyer Operator, Joint Conference of the International Fuzzy Systems Association and the European Society for Soft Computing, Fuzzy Logic and Technology, IFSA-EUSFLAT 2009 Lisbon, Portugal, July 20-24 2009.
4. B. Bede, L. Stefanini, Numerical Solution of Interval Differential Equations with generalized Hukuhara differentiability, IFSA-EUSFLAT 2009 Lisbon, Portugal, July 20-24 2009.
5. B. Bede, H. Nobuhara, I.J. Rudas, J. Fodor, Discrete Cosine Transform based on Uninorms and Absorbing Norms, 2008 IEEE International Conference on Fuzzy Systems (FUZZ 2008), Hong Kong 2008, pp. 1982-1986.
6. B. Bede, H. Nobuhara, and E. D. Schwab Multichannel Image Decomposition by Using Pseudo-linear Haar Wavelets, IEEE International Conference on Image Processing, September 16-19, 2007, San Antonio, Texas, USA.
7. I. J. Rudas, B. Bede, H. Nobuhara, and K. Hirota, 'On approximation capability of pseudo-linear Shepard approximation operators,' Proc. of IEEE International Conference on Fuzzy Systems (Fuzz-IEEE2006), pp. 6642-6647, Sheraton Vancouver Wall Centre Hotel, Vancouver, BC, Canada, July 16-21, 2006.
8. H. Nobuhara, B. Bede, and K. Hirota, 'A Hierarchical Representation of Video/Image Database by Formal Concept Analysis and Fuzzy Clustering,' Proc. of IEEE International Conference on Fuzzy Systems (Fuzz-IEEE2006), pp. 4293-4297, Sheraton Vancouver Wall Centre Hotel, Vancouver, BC, Canada, July 16-21, 2006.
9. M. Dankova, B. Bede, Aggregation Operators Based Fuzzy Approximation, Proc. of International Conference on Intelligent Engineering Systems, INES'06, pp. 154-159, London, UK, June 26-28, 2006.
10. A. L. Bencsik, B. Bede, D. Noje, H. Nobuhara, K. Hirota, Max product exponential approximation operators, IEEE ISIE 2006, 542-547, July 9-12, Montreal, Canada 2006.

11. B. Bede, I.J. Rudas, S.G. Gal, "Almost periodic solutions of fuzzy differential equations" to the International Symposium on Computational Intelligence and Intelligent Informatics– ISCIII'2005, Carthage, Tunisia.
12. H. Nobuhara, B. Bede, and K. Hirota, 'Max-plus Algebra Based Wavelets and Their Application to Motion Compression/Reconstruction,' Proc. of the 6th International Symposium on Advanced Intelligent Systems (ISIS2004), pp. 27-32, Yeosu, Korea, September 28-October 1, 2005
13. H. Nobuhara, K. Kitamura, B. Bede, and K. Hirota, 'Generalized Non-linear Wavelets and Their Application to Medical Image Processing,' Proc. of IEEE International Conference on Systems, Man and Cybernetics (IEEE 2005 SMC) (CD-Proceedings), T-PM5-2, Hawaii, USA, October 10-12, 2005
14. H. Nobuhara, K. Kitamura B. Bede and K. Hirota, Generalized Non-linear Wavelets and Their Application to Medical Image Processing, IEEE International Conference on Systems, Man and Cybernetics (IEEE 2005 SMC), Hawaii, USA - October 10-12, 2005.
15. H. Nobuhara, B. Bede, K. Hirota, Fuzzy/Max-plus Algebraic Structure Based Image Compression/Reconstruction,' Daedeok International Conference on Human-Centered Advance Technology 2005, Daedeok Science Town, South Korea, September 25-27, 2005
16. B. Bede, H. Nobuhara, I. J. Rudas, K. Hirota, Generalized Convex Combined Eigen Fuzzy Sets and Their Applications to Image Analysis, IEEE SOFA 2005, Szeged-Arad, Hungary-Romania, 27-30.
17. H. Nobuhara, B. Bede, K. Hirota, Multichannel Representation of Non-Linear Wavelets and Its Application to Image Compression/Reconstruction, IEEE SOFA 2005, Szeged-Arad, Hungary-Romania, 172-178.
18. H. Nobuhara, B. Bede, and K. Hirota, On A Simplification of Non-linear Wavelets and Its Application to Image Compression/Reconstruction', 2005 IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing (NISP 2005), May 18-20, Sapporo, Japan.
19. H. Nobuhara, E.M. Iyoda, B. Bede, K. Hirota, A Solution of Eigen Fuzzy Sets Equations by Genetic Algorithms and its Application to Image Analysis, Second IEEE Conference on Intelligent Systems, Varna, Bulgaria, 2004, 208-212.
20. H. Nobuhara, B. Bede, K. Hirota, Generation of various eigen fuzzy sets by permutation fuzzy matrix and its application to image analysis, IEEE International Conference on Fuzzy Systems, Budapest Hungary, 3(2004), 1715-1719.

21. H. Nobuhara, B. Bede, and K. Hirota, 'Generalized T-norm/S-norm Based Decomposition of Fuzzy Relation and its Application to Image Component Analysis,' Proc. of AFSS2004 International Conference on Fuzzy Systems, pp. 21 - 25, Hanoi, Vietnam, December 15-17, 2004.
22. H. Nobuhara, B. Bede, K. Hirota, and N. Wakami, 'Flexible Design of Synthesis/Analysis Operations for Morphological Wavelets,' Proc. of International Symposium on Computational Intelligence and Industrial Applications (ISCIIA2004)(CD-Proceedings), TA2C-3, Haikou, China, December 20 - 24, 2004.
23. H. Nobuhara,, B. Bede, K. Hirota, and N. Wakami, 'Flexible Design of Synthesis/Analysis Operations for Morphological Wavelets,' International Symposium on Computational Intelligence and Industrial Applications (ISCIIA2004), Haikou, China, Dec. 20 - 24, 2004, CD-Proceedings.
24. H. Nobuhara, B. Bede and K. Hirota, 'Generalized T-norm/S-norm Based Decomposition of Fuzzy Relation and its Application to Image Component Analysis,' AFSS2004.
25. A. Di Nola, B. Bede, Image file compression using approximation and fuzzy logic, Proceedings of WILF 2003 conference, Napoli, Italy.

6. Textbooks

1. I. Dzitac, B. Bede, S. Dzitac, A. Madar, G. I. Oros, Analiza matematica– Calcul diferential/ Mathematical Analysis: Diferential calculus, Editura Universitatii din Oradea, 2001. (in Romanian).
2. D. Ionac., A. Alb,S. Muresan, B. Bede., Analiza matematica. Culegere de probleme vol. 1/ Mathematical Analysis. Problem Book, vol 1, Editura Brevis Oradea, 2000. (in Romanian).

7. Other Conference Proceedings/Book of Abstracts

1. B. Bede, S.G. Gal, Max-Product Approximation Operators, Applied Mathematics and Approximation Theory, AMAT 2008 October 11-13, Memphis, Tennessee.
2. B. Bede, Numerical solutions of fuzzy differential equations, FEMTEC 2007, The University of Texas at El Paso, December, 2007.
3. J. Fodor, B. Bede, Arithmetics with Fuzzy Numbers: a Comparative Overview, SAMI 2006 conference, Herlany, Slovakia.
4. B. Bede, Fuzzy Differential Equations under generalized differentiability, FSTA 2006, Liptovsky Mikulas, Slovakia.

5. I.J. Rudas, J. Fodor, B. Bede, Uninorms and Absorbing norms in Image Processing, SACI 2006, Timisoara, Romania.
6. A.L. Bencsik, B. Bede, J.K. Tar, J. Fodor, Fuzzy differential equations in modeling of Hydraulic Differential Servo Cylinders, SACI 2006, Timisoara, Romania.
7. J. Fodor, I.J. Rudas, B. Bede, Uninorms and Absorbing Norms with Applications to Image Processing, SISY 2006, Subotica, Serbia, 2006.
8. M. Dankova, I. Stajner Papuga, B. Bede, Pseudo-Fourier Transform, SISY 2006, Subotica, Serbia, 2006.
9. J. Gáti, B. Bede, Variation diminishing spline approximation of fuzzy functions, Proceedings of the WSEAS MATH'05 Conference, Tenerife, Canary Island.
10. B. Bede, J. Fodor, The cross product of fuzzy numbers and its applications in geology, MTN 2005 conference, Budapest, Hungary.
11. B. Bede, H. Nobuhara, I.J. Rudas, K. Hirota, Shepard Approximation of Fuzzy Input Fuzzy Output Functions, Proceedings of the SAMI 2005 conference, Herlany, Slovakia, 115-122.
12. B. Bede, I.J. Rudas, A. L. Bencsik, First order linear fuzzy differential equations under generalized differentiability, Proceedings of the SACI 2005 conference, Timisoara, Romania, 285-294.
13. H. Nobuhara, B. Bede, K. Hirota, A Fast Learning Method Using Cost Matrices for Morphological Neural Networks, SISY2005, Subotica, Serbia and Montenegro 149-156.
14. B. Bede, H. Nobuhara, J. Fodor, K. Hirota, Max-Product Shepard Approximation Operators, SISY2005, Subotica, Serbia and Montenegro, 101-108.
15. B. Bede, H. Nobuhara, K. Hirota, Numerical Computation of Eigen Fuzzy Sets and Applications to Image Analysis, Proceedings of the International Conference on Computers and Communications, Oradea, 2004, 275-280.