



Technical University of Cluj-Napoca

Faculty of Automation and Computer Science

Department of Mathematics

Desired Employment: Associate Professor – position 19

Lecturer PhD. Otrocol Diana Ioana

List of published papers

1. PhD Thesis:

Contribution to the theory of the Lotka-Volterra systems with retarded argument

PhD Coordinator: Prof. Dr. Petru Blaga

2. Books and chapters in books:

D. Otrocol, Lotka-Volterra systems with retarded argument, Editura Presa Universitară Clujeană, 2007.

Chapters in books:

The papers

1. **D. Otrocol**, I. A. Rus, *Functional-differential equations with “maxima” via weakly Picard operators theory*, Bull. Math. Soc. Sci. Math. Roumanie, 51(99) (2008), no. 3, 253-261 și

2. **D. Otrocol**, I. A. Rus, *Functional-differential equations with maxima of mixed type*, Fixed Point Theory, 9 (2008), no. 1, pp. 207-220 –

Represent chapters in the book

- D.D. Bainov, S.G. Hristova, Differential equations with maxima, *Chapman & Hall/CRC Pure and Applied Mathematics*, 302 pp., 2011.



3. ISI papers

1. V. Ilea, **D. Otrocol**, I.A. Rus, M.-A. Serban, Applications of fibre contraction principle to some classes of functional integral equations, *Fixed Point Theory* (ISSN: 1583-5022, IF: 1.396), 23 (2022) no. 1, 279-292, <http://doi.org/10.24193/fpt-ro.2022.1.18>
2. A. Novac, **D. Otrocol**, D. Popa, Ulam stability of a linear difference equation in locally convex spaces, *Results Math.* (ISSN: 1422-6383, IF= 2.214), 76, 33 (2021), <https://doi.org/10.1007/s00025-021-01344-2>
3. V. Ilea, **D. Otrocol**, On a Volterra integral equation with delay, via w-distances, *Mathematics* (ISSN: 2227-7390, IF= 2.592), 9(18) (2021), 2341, 1-8, <https://doi.org/10.3390/math9182341>
4. V. Ilea, **D. Otrocol**, Functional differential equations with maxima, via step by step contraction principle, *Carpathian J. Math.* (ISSN: 1584-2851, IF 1.36), 37 (2021) no. 2, pp. 195-202, <https://doi.org/10.37193/CJM.2021.02.05>
5. V. Ilea, A. Novac, **D. Otrocol**, R. Precup, Solutions with a prescribed interval of positivity for differential systems with nonlocal conditions, *Appl. Math. Comput.* (ISSN: 0096-3003, IF: 4.397), 375 (2020), 15, 125092, <https://doi.org/10.1016/j.amc.2020.125092>
6. V. Ilea, **D. Otrocol**, Existence and uniqueness of the solution for an integral equation with supremum, via w-distances, *Symmetry* (ISSN: 2073-8994, IF: 2.94), 12(2020), 1554, <https://doi.org/10.3390/sym12091554>
7. A.M. Acu, A. Maduta, **D. Otrocol**, I. Raşa, Inequalities for Information Potentials and Entropies, *Mathematics*, (ISSN: 2227-7390, IF: 2.592), 8(11) (2020), 2056, <https://doi.org/10.3390/math8112056>
8. V. Ilea, **D. Otrocol**, On the Burton method of progressive contractions for Volterra integral equations, *Fixed Point Theory* (ISSN: 1583-5022, IF: 1.396), 21 (2020), No. 2, 585-594, <http://doi.org/10.24193/fpt-ro.2020.2.41>
9. A. Aral, **D. Otrocol**, I. Raşa, On approximation by some Bernstein–Kantorovich exponential-type polynomials, *Period. Math. Hung.* (ISSN 0031-5303, IF: 0.672), 79(2019) 236-254. <https://doi.org/10.1007/s10998-019-00284-3>, IF 0.664
10. **D. Otrocol**, Qualitative properties of solutions for mixed type functional-differential equations with maxima, *Miskolc Mathematical Notes* (ISSN 1787-2413, IF: 1.22), 20 (2019), No. 2, 1119–1128, <https://doi.org/10.18514/MMN.2019.1946>, IF: 0.468



11. **D. Otrocol**, M.-A. Serban, An efficient step method for a system of differential equations with delay, *Journal of Applied Analysis and Computation* (ISSN: 2156-907X, IF: 1.429), 8 (2018), No. 2, 498-508, <https://doi.org/10.11948/2018.498> (IF: 1.063)
12. B. C. Dhage, **D. Otrocol**, Dhage iteration method for approximating solutions of nonlinear differential equations with maxima, *Fixed Point Theory* (ISSN: 1583-5022, IF: 1.396), 19(2018), No. 2, 545-556, <https://doi.org/10.24193/fpt-ro.2018.2.43> (IF:0.548)
13. V. Ilea, **D. Otrocol**, Some properties of solutions to a planar system of nonlinear differential equations, *Stud. Univ. Babeş-Bolyai Math.* (ISSN: 0252-1938, ISI Journal) 63(2018), No. 2, 225-234, <https://doi.org/10.24193/subbmath.2018.2.06>
14. V.A. Ilea, **D. Otrocol**, An application of the Picard operator technique to functional integral equations, *J. Nonlinear Convex Anal.* (ISSN: 1345-4773, IF: 1.016), 18 (2017) no. 3, pp. 405-413.
15. T. Căţinaş, **D. Otrocol**, I.A. Rus, The iterates of positive linear operators with the set of constant functions as the fixed point set, *Carpathian J. Math.* (ISSN: 1584-2851, IF: 1.36) 32 (2016), No. 2, 165-172
16. V.A. Ilea, **D. Otrocol**, Some properties of solutions of a functional-differential equation of second order with delay, *The Scientific World Journal* (ISSN: 1537-744X, IF: 1.219), Volume 2014 (2014), Article ID 878395, 8 pages, <http://www.hindawi.com/journals/tswj/2014/878395/>
17. **D. Otrocol**, Systems of functional-differential equations with maxima, of mixed type, *Electron. J. Qual. Theory Differ. Equ.* (ISSN: 1417-3875, IF: 1.316), 2014, No. 5, 1-9, http://www.math.u-szeged.hu/ejqtde/periodica.html?periodica=1¶mtipus_ertek=publication¶m_ertek=2413
18. **D. Otrocol**, V.A. Ilea, Qualitative properties of functional differential equation, *Electron. J. Qual. Theory Differ. Equ.* (ISSN: 1417-3875, IF: 1.316), 2014, No. 47, 1-8, http://www.math.u-szeged.hu/ejqtde/periodica.html?periodica=1¶mtipus_ertek=publication¶m_ertek=2914
19. T. Catinas, **D. Otrocol**, *Iterates of Bernstein type operators on a square with one curved side via contraction principle*, *Fixed Point Theory* (ISSN: 1583-5022, IF: 1.396), 14(2013), no.1, 97-106
20. T. Catinas, **D. Otrocol**, *Iterates of multivariate Cheney-Sharma operators*, *Journal of Computational Analysis and Applications* (ISSN: 1521-1398, IF: 0.609), 15 (2013), no. 7, 1240-1246



21. **D. Otrocol**, V.A. Ilea, Ulam stability for a delay differential equation, Central European Journal of Mathematics (ISSN: 1895-1074, IF: 0.489) 11(7) (2013), 1296-1303
22. **D. Otrocol**, V.A. Ilea, C. Revnic, *An iterative method for a functional-differential equation of second order with mixed type argument*, Fixed Point Theory (ISSN: 1583-5022, IF: 1.396), 14 (2013), no.2, 427-434
23. V. Ilea, **D. Otrocol**, M.-A. Serban and D. Trif, Integro-differential equation with two time lags, Fixed Point Theory (ISSN: 1583-5022, IF: 1.396), 13 (2012), no. 1, pp. 85-97
24. **D. Otrocol**, V. Ilea, Integro-differential equation with two times modifications, Carpathian Journal of Math. (ISSN: 1584-2851, IF: 1.36) 27 (2011), No. 2, 209-216.
25. **D. Otrocol**, V. Ilea C. Revnic, An iterative method for a functional-differential equation with mixed type argument, Fixed Point Theory (ISSN: 1583-5022, IF: 1.396), 11 (2010), no. 2, 327-336
26. V. Ilea, **D. Otrocol**, On a D.V. Ionescu's problem for functional-differential equations, Fixed Point Theory (ISSN: 1583-5022, IF: 1.396), 10 (2009), no. 1, 125-140
27. **D. Otrocol**, I. A. Rus, Functional-differential equations with "maxima" via weakly Picard operators theory, Bull. Math. Soc. Sci. Math. Roumanie (ISSN: 1220-3874, IF: 0.232), 51(99) (2008), No. 3, pp. 253-261.
28. **D. Otrocol**, I. A. Rus, Functional-differential equations with maxima of mixed type, Fixed Point Theory (ISSN: 1583-5022, IF: 1.396), 9 (2008), No. 1, pp. 207-220.
29. **D. Otrocol**, Abstract Volterra operators, Carpathian J. Math. (ISSN: 1584-2851, IF: 1.36) 24 (2008), No. 3, pp. 370-377

4. BDI papers

1. **D. Otrocol** and V. Ilea, On the qualitative properties of functional integral equations with abstract Volterra operators, Res. Fixed Point Theory Appl. (ISSN: 2581-6047), Volume 2018, 2018, Article ID 201813, 08 pages
2. **D. Otrocol**, On the asymptotic equivalence of a differential system with maxima, Rendiconti del Circolo Matematico di Palermo Series 2 (ISSN: 0009-725X), 2016, Volume 65, Issue 3, pp 387–393 DOI 10.1007/s12215-016-0240-3 (Journal ISI)
3. **D. Otrocol**, Hybrid differential equations with maxima via Picard operators theory, Stud. Univ. Babeş-Bolyai Math. (ISSN: 2065-961X), 61 (2016) no. 4, pp. 421-428.



4. V. Ilea, **D. Otrocol**, I.A. Rus, Some properties of solutions of the homogeneous nonlinear second order differential equations, *Mathematica (Cluj)* (ISSN: 1222-9016), 57 (80), No. 1-2 (2015)
5. **D. Otrocol**, Properties of the solutions of a system of differential equations with maxima, *Communications in Applied Analysis* (ISSN: 1083-2564), 17 (2013), no.1, 99-108, <http://www.dynamicpublishers.org/journals/index.php/CAA>
6. **D. Otrocol**, *Ulam stabilities of differential equation with abstract Volterra operator in a Banach space*, *Nonlinear Functional Analysis and Applications* (ISSN: 2466-0973), 15(2010), No. 4, 613-619.
7. **D. Otrocol**, A differential equation with delay from biology, *J. Appl. Math. & Informatics* (ISSN: 2234-8417), 26 (2008), no. 5-6, 1037-1048.
8. **D. Otrocol**, Differentiability with respect to delays for a Lotka-Volterra system, *Creative Math. & Inf.* (ISSN: 1584 – 286X), 16 (2007), 36-41.
9. Ş. M. Şoltuz, **D. Otrocol**, Classical results via Mann-Ishikawa iteration, *Rev. Anal. Numér. Théor. Approx.* (ISSN: 1222-9024), 36 (2007), no. 2, 195-199
10. Ş. M. Şoltuz, **D. Otrocol**, The convergence of Mann iteration with delay, *Mathematical Sciences Research* (ISSN: 1537-5978), 2007, Vol. 11, no. 3, pp. 390-393
11. **D. Otrocol**, Differentiability with respect to a parameter for a Lotka-Volterra system with delays, via step method, *Rev. Anal. Numér. Théor. Approx.* (ISSN: 1222-9024), 35 (2006), no. 1, 83-86.
12. **D. Otrocol**, Data dependence for the solution of a Lotka-Volterra system with two delays, *Mathematica (Cluj)* (ISSN: 1222-9016), 48 (71) (2006), no. 1, 61-68.
13. **D. Otrocol**, Numerical solution of Lotka-Volterra system with delay by spline functions of even degree, *Studia Univ. "Babes-Bolyai", Mathematica* (ISSN: 2065-961X), 51 (2006), no. 4, 167-180.
14. **D. Otrocol**, A numerical method approximating the solution of a Lotka-Volterra system with two delays, *Studia Univ. "Babes-Bolyai", Mathematica* (ISSN: 2065-961X), 50 (2005), no.1, 99-110.
15. **D. Otrocol**, Smooth dependence on parameters for some Lotka-Volterra system with delays, *Analele Universităţii din Timişoara, Seria Matematică-Informatică* (ISSN: 1841-3307), Vol. XLIII, fasc. 1, 2005, 109-114.
16. **D. Otrocol**, Lotka-Volterra system with two delays, via weakly Picard operators, *Nonlinear Analysis Forum* (ISSN: 1226-7228), 10 (2), pp. 193-199, 2005.



5. Papers in Proceedeengs:

1. V.A. Ilea, **D. Otrocol**, On a D.V. Ionescu's problem for functional-differential equations of second order, Proceedings of the 10th IC-FPTA, 131–142, July 9-18, 2012, Cluj-Napoca, Romania
2. **D. Otrocol**, Data dependence of the fixed points set for a Lotka-Volterra system, Proceedings of the International Conference on Numerical Analysis and Approximation Theory, Cluj-Napoca, Romania, July 5-8, 331-336, 2006.

6. National and international conferences:

- “Applications of fibre contraction principle to some classes of equations” (with V. Ilea), Functional Analysis, Approximation Theory and Numerical Analysis, Matera, Italy, July 5-8 2022, FAATNA20>22.
- “Applications of fibre contraction principle to some classes of functional integral equations” (with V. Ilea), Functional Analysis, International Conference on Approximation Theory and Its Applications, September 12-14, 2022, ICATA2022, Sibiu, Romania.
- “Applications of fibre contraction principle to some classes of equations” (with V. Ilea), Numerical Analysis, Numerical Modeling, Approximation Theory (NA-NM-AT 2022), October 26-28, Cluj-Napoca, Romania, online.
- “Functional differential equations with maxima, via step by step contraction principle” (with V. Ilea), Approximation Theory and Applications, (8th European Congress of Mathematics, Portoroz, Slovenia, 20-26 iunie 2021, <https://8ecm.si/system/admin/abstracts/pdfs/000/002/032/original/diana-otrocol.pdf?1620802238>
- “Ulam stability of a linear difference equation in locally convex spaces” (with A. Novac si D. Popa), International Conference on Approximation Theory and Its Applications, Alexandru Lupas, 10-13 October, 2019, Sibiu, Romania, <http://conferences.ulbsibiu.ro/icata>
- “Functional equations and entropies” (with Ioan Rasa),, The Eighteenth International Conference on Functional Equations and Inequalities (18 ICFEI), Bedlewo, Poland, June 9 - 15, 2019, <https://icfei.up.krakow.pl/>
- “Ulam stability of a linear difference equation in topological vector spaces” (with Adela Novac and Dorian Popa), Conference on Ulam's Type Stability October 8-13, 2018, Timișoara, Romania, <https://cuts.up.krakow.pl/2018/>



- “Heun inverse problem” (with Adina Barar and Daniela Inoan), First Romanian Itinerant Seminar on Mathematical Analysis and its Applications (RISMAA), Cluj-Napoca, April 20-21, 2018, <http://www.cs.ubbcluj.ro/1st-rismaa/>
- “Ulam constants for functional equations” (with Laura Hodis, Alexandra Maduta), International Conference on Numerical Analysis and Approximation Theory, Cluj-Napoca, Romania, September 6–9, 2018, <http://math.ubbcluj.ro/naat2018/>
- “An iterative algorithm for solving some second order nonlinear differential equations”, Cluj Academic Days, June 13-14, 2017, <http://ictp.acad.ro/zilele-academic-clujene-2017/>
- “Ulam-Hyers stability of differential equation with maxima”, Conference on Ulam’s Type Stability, CUTS 2016, July 4-9, 2016, Cluj-Napoca, Romania, <http://cuts.up.krakow.pl/2016/>
- “Properties of functional differential equation in Banach spaces” (with V. Ilea), 11-th Joint Conference on Mathematics and Computer Science, MaCS 2016, May 20-22, 2016, Eger, Hungary, <http://www.cs.ubbcluj.ro/11th-joint-conference-on-mathematics-and-computer-science/>
- “On the qualitative properties of functional integral equations with abstract Volterra operators” (with V. Ilea), Function Spaces, Differential Operators and Nonlinear Analysis, FSDONA 2016, Prague, Czech Republic, 4-9 July, 2016, <http://fsdona.karlin.mff.cuni.cz/>
- “Step method for a system of differential equations with delay”, Academic Days of Cluj-Napoca, May 18-20, 2016, Cluj-Napoca, Romania
- “Hybrid differential equations with maxima via Picard operators theory”, International Conference on Nonlinear Operators, Differential Equations and Applications, July 14-17, 2015, Cluj-Napoca, Romania, <http://www.cs.ubbcluj.ro/~icnodeacj/>
- “Qualitative properties of solutions of functional-differential equations with maxima, of mixed type”, The Sixth International Workshop-2015, Miskolc, Hungary
- ”Integral equations with maxima”, Academic Days of Cluj-Napoca, June 5-6, 2014, Cluj-Napoca, Romania.
- ”On a functional-integral equation, via Picard operators technique” (with V. Ilea), Theodor Angheluta Seminar, The Fourteenth International Conference on Applied Mathematics and Computer Science, August 29-31, 2013, Cluj-Napoca, Romania.
- ”Qualitative properties of functional differential systems” (with V. Ilea), 9th International Conference on Applied Mathematics (ICAM9), September 25-28, 2013, Baia Mare, Romania.
- ”On a D.V. Ionescu’s problem for functional-differential equations of second order” (with V. Ilea), Fixed Point Theory and its Applications, 10th edition of ICFPTA, July 9-15, 2012, Cluj-Napoca, Romania.



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- "On the asymptotic equivalence of a differential system with maxima", Fixed Point Theory and its Applications, 10th edition of ICFPTA, July 9-15, 2012, Cluj-Napoca, Romania.
 - "The properties of a solutions of a differential system with maxima", Academic Days of Cluj-Napoca, Simpozion "Metode numerice si aproximate", May 22-25, 2012, Cluj-Napoca, Romania.
 - "An iterative method for a functional-differential equation of second order with mixed type argument" (with V. Ilea), International Conference on Nonlinear Operators, Differential Equations and Applications (ICNODEA 2011), July 5-8, 2011, Cluj-Napoca, Romania.
 - "Step method for some integral equations" (with V.A. Ilea, M.A. Serban, D. Trif), 13th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC 2011), September 26-29, 2011, Timisoara, Romania.
 - "A differential equation with delay from biology", International Conference on Nonlinear Operators, Differential Equations and Applications, July 4-8, 2006, Cluj-Napoca.
 - "Data dependence of the fixed points set for a Lotka-Volterra system", International Conference on Numerical Analysis and Approximation Theory (NAAT 2006), July 5-8, 2006, Cluj-Napoca, Romania.
 - "Numerical solutions of Lotka-Volterra system with delay by spline functions of even degree", International Congress of Mathematicians (ICM 2006), August 22-30, 2006, Madrid.
 - "Differentiability with respect to delays for a Lotka-Volterra system", International Conference on Applied Mathematics, September 21-24, 2006, Baia-Mare, Romania.
 - "Differentiability with respect to parameters of a differential system with delay", Academic Days of Cluj-Napoca, June 26-July 14, 2006, Cluj-Napoca, Romania.
 - "A numerical method approximating the solution of a Lotka-Volterra system with two delays", International Conference on Nonlinear Operators, Differential Equations and Applications, August 24-27, 2004, Cluj-Napoca, Romania.