

CURRICULUM VITAE

Personal Information

First name: Senada

Last name: Kalabušić

Place of Birth: Sarajevo, Bosnia and Herzegovina

E-mail: senadak@pmf.unsa.ba, kalabusicssenada06@gmail.com

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Present Position

Institution: University of Sarajevo, Department of Mathematics

Position: Professor

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Education Background

- University of Sarajevo, Department of Mathematics PhD in Mathematics 2003
- University of Sarajevo, Department of Mathematics MSc in Mathematics 2000
- University of Sarajevo, Department of Mathematics BSc in Mathematics 1996

Academic Position

- Professor, University of Sarajevo, Department of Mathematics December 2011-present
- Associate Professor, University of Sarajevo, Department of Mathematics, 2007-December 2011
- Assistant Professor, University of Sarajevo, Department of Mathematics, 2003-December 2007
- Senior Teaching Assistant, University of Sarajevo, Department of Mathematics, 2000-2003
- Teaching Assistant, University of Sarajevo, Department of Mathematics, 1997-2000

Research Interest

In general terms, my interest involve :

- Basic Global Theory of Difference Equations (Stability, Asymptotic Behavior, Existence Problems).
- Oscillation and Asymptotic Behavior of Solutions of Difference Equations.
- Bifurcation Theory for Discrete Dynamical Systems.
- Monotone Discrete Dynamical Systems (Competitive and Cooperative).
- Normal Forms for Discrete Dynamical Systems
- Mathematical Modeling that Involves any of the Equations from Above.

Publication in International Journals

1. S. Kalabušić , M.R.S. Kulenović, Asymptotic Behavior of Certain Third Order Rational Difference Equation, *Radovi Matematički* 11 (2002) 70-101.

2. S. Kalabušić, M.R.S. Kulenović, Carol B. Overdeep, On the Asymptotic of the Rational Difference Equation of Third Order, *J. Concrete Appl. Math.* 1(2003) 149-162.

3. S. Kalabušić , M.R.S. Kulenović, On the Recursive Sequence $x_{n+1} = \frac{\gamma x_{n-1} + \delta x_{n-2}}{Cx_{n-1} + Dx_{n-2}}$,
J. Differ. Equations Appl. 9 (2003) 701-720.

4. S.Kalabušić, F. Vajzović, Exponential Formula for One-time Integrated Semigroup ,
Novi Sad J. Math. Vol.33 No.2, 2003.

5. S. Kalabušić, M.R.S. Kulenović, Rate of Convergence of Solutions of Rational Difference Equations of Second Order, *Advanced in Difference Equations* 2004:2(2004) 121-139.

6 .S. Kalabušić, M.R.S. Kulenović, Carol B. Overdeep, On the Dynamics of Equation
 $x_{n+1} = \frac{\gamma x_{n-l} + \delta x_{n-k}}{Cx_{n-l} + Dx_{n-l}}$, *J. Differ. Equations Appl.* 10 (2004) 915-928.

7. S. Kalabušić, M.Nurkanović, On the Dynamics of $x_{n+1} = p_n + \frac{x_{n-1}}{x_{n-2}}$, $n = 0,1,2,\dots$

With a Periodic Coefficient, *Communication on Applied Nonlinear Analysis*, Vol.13(2006), Number 2, 37-57.

8. C.H. Gibbons, S. Kalabušić, C.B. Overdeep, The dichotomy character of
 $x_{n+1} = \frac{\beta_n x_n + \gamma_n x_{n-1}}{A_n + B_n x_n}$, $n = 0,1,\dots$ *Proceedings of the International conference on Difference Equations*, Munich 2005, pp 480-496, 2007.

9. Dž. Burgić, S. Kalabušić, M.R.S. Kulenović, Non-hyperbolic Dynamics for Competitive Systems in the Plane and Global Period-doubling Bifurcations, *Advn. Dynamical Syst. And Appl.* 3 (2008).
10. Burgić, Dž.; Kalabušić, S.; Kulenović, M. R. S. Period-two trichotomies of a difference equation of order higher than two. *Sarajevo J. Math.* 4(16) (2008), no. 1, 73--90.
11. Burgić, Dž.; Kalabušić, S.; Kulenović, M. R. S., Global attractivity results for mixed-monotone mappings in partially ordered complete metric spaces. *Fixed Point Theory Appl.* **2009**, Art. ID 762478
12. A. Brett, Kalabušić, S.; Kulenović, M. R. S. Global Attractivity Results in Partially Ordered Complete Metric Spaces, *Nonlinear Studies*, Vol. 18. No 2, pp 141-154.
13. S. Kalabušić, M.R.S. Kulenović, Dynamics of Certain Anti-competitive Systems of Rational Difference Equations in the Plane, *Journal of Difference Equations and Applications*, 2011, DOI: 10.1080/10236191003730506.
14. S. Kalabušić, M.R.S. Kulenović, E. Pilav, Global Dynamics of a Competitive System of Rational Difference Equations in the Plane, *Advances in Difference Equations* Vol. 2009, Article ID 132802, 30 pages, doi: 10.1155/2009/132802
15. S. Kalabušić, M.R.S. Kulenović, and E. Pilav, Dynamics of a Two-dimensional System of Rational Difference Equations of Leslie-Gower type, *Advances in Difference Equations*, Volume 2011 (2011), 2011:29 doi:10.1186/1687-1847-2011-29 .
16. S. Kalabušić, M.R.S. Kulenović, and E. Pilav, Multiple Attractors for a Competitive System of Rational Difference Equations in the Plane, *Abstract and Applied Analysis*, Volume 2011 (2011)
17. C.H Gibbons, S.Kalabušić and C.B. Overdeep, More results on the trichotomy character of a second-order rational difference equation with period-two coefficients, *Journal of Difference equations and applications*, DOI:10.1080/10236198.2012.704916, July 2012.
18. S. Kalabušić, M.R.S. Kulenović, and E. Pilav, Global Dynamics of an Anti-Competitive System of Rational Difference Equations in the Plane, *J. Difference Equ. Appl.* 19 (2013), no. 11, 1849–1871 19.

19. Kalabušić, S.; Kulenović, M. R. S.; Pilav, E. Global dynamics of anti-competitive systems in the plane. *Dyn. Contin. Discrete Impuls. Syst. Ser. A Math. Anal.* 20 (2013), no. 4, 477–505.
20. S. Kalabušić, M.R.S. Kulenović and M.Mehuljić, Global Period-doubling Bifurcation of Quadratic Fractional Second Order Difference Equation, *Discrete Dyn. Nat. Soc.*, (2014) Volume 2014.
21. Kalabušić, S.; Kulenović, M. R. S.; Pilav, E., Basins of Attraction of Certain Linear Fractional System of Difference Equations in the Plane, *International Journal of Difference Equations*, 2014
22. S.Kalabušić, M.R.S.Kulenović and M.Mehuljić, Global Dynamics and Bifurcations of Two quadratic Fractional Difference Equations, *J.Comp.Anal.Appl.*, 20(2016),12p.
23. Bektešević, Jasmin; Mehuljić, Midhat; Hadžiabdić, Vahidin; Kalabušić, Senada Global asymptotic behavior of some quadratic reational second-order difference equations. *Int. J. Difference Equ.* 12 (2017), no. 2, 169–183.
24. Senada Kalabušić, Mehmed Nurkanović and Zehra Nurkanović, Global Dynamics of Certain Mix-monotone Difference Equations, *Mathematics*, Special Issue "Advances in Differential and Difference Equations with Applications 2018, (1), 10; doi:[10.3390/math6010010](https://doi.org/10.3390/math6010010).
25. S. Kalabušić, N. Mujić and E. Pilav, The Invariant Curve in a Planar System of Difference Equations, *Advances in Dynamical Systems and Applications*, 2018 (prihvaćen za objavljivanje).

Other publication: Kalabušić, Senada *Happy 60th birthday Professor Kulenović*. Sarajevo J. Math. 8(21) (2012), no. 2, 175–178. 01A70 (39-03)

Paper submitted for publication:

1. S.Kalabušić. M.R.S. Kulenović and M. Mehuljić, *Global Dynamics of Monotone Second Order Difference Equations*

International Conferences (paper presented at professional meetings)

- Bosnian-Croatian Analysis Meeting, Bihać, May 10-12,2001 Bosnia&Herzegovina.
Speaker: Senada Kalabušić, On the Recursive Sequence $x_{n+1} = \frac{\alpha + \delta x_{n-2}}{A + Bx_n}$, $n = 0,1,\dots$
- International Congress Masee'2003, September 15-21,2003, Borovets, Bulgaria.

Speaker: Senada Kalabušić, On the Recursive sequence $x_{n+1} = \frac{\gamma x_{n-l} + \delta x_{n-k}}{Cx_{n-l} + Dx_{n-k}}$

- International Conference on Difference Equations, Special Functions and Applications Munich, 25-30 July, 2005.

Speaker: Senada Kalabušić, On the Trichotomy behavior of equation

$$x_{n+1} = \frac{q_n x_n + r_n x_{n-1}}{1 + x_n}$$

- European Advanced Studies, Progress on Difference Equations, Homburg/Saar, Germany, 6 th March-10 th March 2006. Speaker: Senada Kalabušić, On the

Dynamics of $x_{n+1} = p_n + \frac{x_{n-1}}{x_{n-2}}$, $n = 0, 1, \dots$

- European Conference on Iteration Theory ECIT 2006., September 10-16, Gargnano Italy. Speaker: Senada Kalabušić, Global Bifurcation for Second Order Monotone Difference Equations.
- Progress on Difference Equations 2007. Laufen/Salzach, Germany, March 31 st-April 5 th 2007. Speaker: Senada Kalabušić, Non-hyperbolic Dynamics of Monotone Discrete Dynamical Systems.
- 14 th International Conference on Difference Equations and Applications, July 21-25, 2008 Istanbul, Speaker: Senada Kalabušić, Period-two trichotomies of a difference equation of order higher than two.
- DAAD, Center of Excellence for Applications of Mathematics; Intensive course : Discrete Dynamical Systems and Difference Equations Organizer : Prof. Dr. Muharem Avdispahić, Department of Mathematics, University of Sarajevo; Lecturers :

1. Prof. Dr. Ulrich Krause, Department of Mathematics,
University of Bremen

2. Assoc. Prof. Dr. Senada Kalabušić, Department of Mathematics,
University of Sarajevo

Place : Faculty of Science, University of Sarajevo

Time : June 15, 2008 (arrival day)

June 22, 2008 (departure day)

- Middletown Sectional Meeting of AMS (American Mathematical Society), October 11, Dynamics of Certain Anti-competitive Systems of Rational Difference Equations in the Plane . Speaker: Senada Kalabušić
- AMS, Washington, January, 2009, *Non-hyperbolic Dynamics for Competitive Systems in the Plane and Global Period-doubling Bifurcations* (joint work with MR.S. Kulenovic and Dz. Burgic). Speaker: M.R.S. Kulenovic
- DAAD Summer school of applied mathematics, Mechanical faculty University of Sarajevo, Systems of difference equations with applications, 2011.
- DAAD summer school of applied mathematics, Faculty of Science University of Sarajevo – Difference Equations with applications 2012.

- 18th International Conference on Difference Equations and Applications, 22nd-27th July 2012, Barcelona, Spain Global dynamics of anti-competitive systems in the plane, speaker: Senada Kalabušić
- The life and career of Professor Kulenović, Senada Kalabušić Seventh Bosnian-Herzegovinian Mathematical Conference(The conference was in honor of Professor Mustafa Kulenović on the occasion of his 60th birthday), august 16, 2012
- Progress on Difference Equations (PODE2014), Izmir Turkey,2014
Speaker: Senada Kalabušić, Global dynamics of three quadratic fractional second order difference equations (joint work with M.R.S. Kulenović and M. Mehuljić)
- 23 rd International Conference on Difference Equations (ICDEA2017), Timisoara, Romania 2017. Speaker: Senada Kalabušić, Global Dynamics of Monotone Second Order Difference Equations (joint work with M.R.S. Kulenović and M. Mehuljić)
- 24th International Conference on Difference Equations and Applications, Dresden, 21st-25th May 2018. Speaker: Senada Kalabušić, Global dynamics of certain mix monotone second order difference equations (joint work with M. Nurkanović and Z. Nurkanović)

Papers in National Journals (in native language)

1. S. Kalabušić, E. Pilav, *Bifurkacije i haos u nekim ekonomskim modelima*, Zbornik radova ekonomskog fakulteta u Sarajevu, 2009.
2. S. Kalabušić, M. Malenica, *Uvod u gama funkciju*, Zbornik radova PMF-a u Tuzli, 2007.
3. Senada Kalabušić, *Neke primjene diferentnih jednažbi u ekonomiji*, Zbornik Radova, Ekonomski fakultet, Vol.24(2004)233-243.
4. Šefket Arslanagić, Senada Kalabušić, *O jednoj Ojlerovoj teoremi iz geometrije i nekim njenim posljedicama*, Triangle Vol.3 (1999) 10-14 No.1
- 5.Šefket Arslanagić, Senada Kalabušić, *40 Međunarodna matematička olimpijada*, Triangle Vol.3 (1999) 210-221 No.3

Books (in native language)

1. S. Kalabušić, Ćamila Ljubović , *Matematika za bruoše* , Šumarski fakultet Univerzitet u Sarajevu, 2007.
2. Senada Kalabušić, Mirjana Malenica, *Specijalne funkcije. Teorija i zadaci*, 2010.. Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2010.
3. Senada Kalabušić, Samra Pirić, *Linearne integralne jednažbe*, Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2011.

4. Senada Kalabušić, Esmir Pilav, Obične diferencijalne jednačbe, Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2014.
5. Senada Kalabušić, Nacima Memić, Esmir Pilav, Parcijalne diferencijalne jednačbe, Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2015.

Grants awarded

- ISI, Course on Selected Topics in Dynamical systems, Torino, May 19-June 30, 1997.
- Department of Mathematics, University of Rhode Island, USA, April 30-June 30, 2002.
- „Diferentne jednačbe s periodičkim koeficijentima i primjene“ („Difference equations with periodic coefficients“, scientific project financed by Ministry of Science and Education of Sarajevo Canton), Kantonalno ministarstvo Obrazovanja, Sarajevo, 2005/2006.
- „Diferentne jednačbe i monotoni diskretni dinamički sistemi“ („Difference equations and discrete dynamical systems“, scientific project financed by Ministry of Science and Education of Sarajevo Canton), Kantonalno ministarstvo Obrazovanja, Sarajevo, Br. 11-14-19768.1/07.
- FULBRIGHT VISITING SCHOLAR 2008/2009. University of Rhode Island, Department of Mathematics
- „Invarijante mnogostrukosti i globalna dinamika određenih frakcionalnih diferentnih jednačbi drugog reda sa kvadratnim članovima“ (Invariant manifolds and global dynamics of certain fractional difference equations with quadratic terms“, scientific project financed by Federal Ministry of Science and Education), Federalno ministarstvo obrazovanja i nauke, 2015.godine
- „Globalna dinamika, bifurkacije i Julia skupovi za neke racionalne diferentne jednačbe sa kvadratnim članovima“ (Global dynamics, bifurcations and Julia sets for some rational difference equations with quadratic terms“, scientific project financed by Federal Ministry of Science and Education“), Federalno ministarstvo obrazovanja i nauke, 2016. godine

PhD Students

1. Esmir Pilav, PhD thesis completed in 2011
2. Midhat Mehuljić, PhD thesis completed in 2015

Master Students

1. Nađa Šečerović, master thesis completed in 2008
2. Esmir Pilav, master thesis completed in 2009
3. Midhat Mehuljić, master thesis completed in 2010
4. Dzeneta Porovic, master thesis completed in 2011
5. Emina Paljevac, master thesis completed in 2011
6. Mirzeta Sofić, master thesis completed in 2011
7. Miranda Šabić. master thesis completed in 2011

8. Jasmin Bektešević, master thesis completed in 2012
8. Aminah Rifai, master thesis completed in 2012
9. Feđa Šolak, master thesis completed in 2012
10. Amra Gusinjac, master thesis completed in 2018

In progress (master)

1. Alma Drina
2. Jovana Pavlović

Service

- Head of Department of Mathematics, 2010-2011
- Vice-Dean for finance, Faculty of Science, University of Sarajevo, 2011-2016
- Chair of the Doctoral studies, Department of Mathematics, University of Sarajevo, 2013-present
- President of the Mathematical Society of Sarajevo Canton, 2016-present
- Member of the International Society of Difference Equations, 2004-

Specific Professional Service Activities

- Reviewer for the MathSciNet, 2005-present
- Referee for more than 10 journals

Other Service

- 45th IMO (International Mathematical Olympiad), Hellas, Team Leader BIH IMO team, 2004.
- Vice-chairperson, JBMO, 2009.
- 54th IMO, Colombia Team Leader, 2013

Conferences

- Chair of the Organizing Committee MICOM2012
- Chair of the Organizing Committee of BMS2018 (Bosnian Mathematical Conference)
- Chair of the Organizing Committee ICDEA2020 (International Conference on Difference Equations), Sarajevo 2020, Bosnia and Herzegovina

International Project

Coordinator on behalf of the University of Sarajevo ERASMUS+project „Enhancement of HE research potential contributing further growth of the WB region”- Grant Holder University of Niš (Project Coordinator) 2015-2018.

Teaching Experience

I have over twenty years of teaching experience at the Department of Mathematics, University of Sarajevo, where I have taught the following courses: Introduction to Linear Algebra, Applied Mathematics, Differential Equations, Introduction to Functional Analysis, Partial Differential Equations, Discrete Dynamical Systems and Difference Equations, Convex Analysis, Functional Analysis (advanced course), Mathematical Modeling, Qualitative Analysis of Differential Equations, Dynamical Systems in Population Biology, Systems and Models in Ecology.

The graduate courses (PhD courses) I have taught at the Department of Mathematics, University of Sarajevo are Dynamical Systems (discrete) and Scientific Methodology (Statistical analysis). The graduate course (PhD course) I have taught at the Faculty of Pharmacy, University of Sarajevo, is Design of Experiments. I have taught one graduate course (PhD course) at the „Džemal Bijedić“ University of Mostar.

A have also taught mathematical courses at the Faculty of Forestry, Faculty of Agriculture and Food Science and Faculty of Pharmacy, University of Sarajevo

I taught at the Department of Mathematics University of Tuzla (two years), Faculty of Pedagogy, University of Bihać (3 years), Faculty of Philosophy, University of Zenica (two years).

