CURRICULUM VITAE

Personal Information

First name: Senada
Last name: Kalabušić
Place of Birth: Sarajevo, Bosnia and Herzegovina
E-mail: senadak@pmf.unsa.ba, kalabusicsenada06@gmail.com
Web page: http://math.pmf.unsa.ba/o-odsjeku/nastavno-osoblje.html

Present Position

Institution: University of Sarajevo, Department of Mathematics
Position: Professor
Address: Zmaja od Bosne 33-35, Sarajevo, Bosnia and Herzegovina
Tel: (+387 33) 27 99 58
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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, *Asymptic 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* $x_{n+1} = \dfrac{\gamma x_{n-1} + \delta x_{n-2}}{Cx_{n-1} + Dx_{n-2}}$,

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* ,Advenced in Difference Equations 2004:2(2004) 121-139.

6 .S. Kalabušić, M.R.S. Kulenović, Carol B. Overdeep, *On the Dynamics of Equation*

$x_{n+1} = \dfrac{\gamma x_{n-l} + \delta x_{n-k}}{Cx_{n-l} + Dx_{n-l}}$, J. Differ. Equations Appl. 10 (2004) 915-928.

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

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*

$x_{n+1} = \dfrac{\beta_n x_n + \gamma_n x_{n-1}}{A_n + B_n x_n}, n = 0,1,...$ 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. Kalabušić, Senada Happy 60th birthday Professor Kulenović. *Sarajevo J. Math.* 8(21) (2012), no. 2, 175–178. 01A70 (39-03)

19. 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.

20. 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.

21. S. Kalabušić, M.R.S. Kulenović and M.Mehuljic, *Global Period-doubling Bifurcation of Quadratic Fractional Second Order Difference Equation*, Discrete Dyn. Nat. Soc., (2014) Volume 2014.

22. 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

23.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.

24. 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.

25.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

26.S. Kalabušić, N.Mujić and E. Pilav, The Invariant Curve in a Planar System of Difference Equations, *Advances in Dynamical Systems and Applications*, 2018.26.

27.Emin Bešo. Naida Mujić, Senada Kalabušić and Esmir Pilav, Basin of attraction of the fixed point and period-two solutions of a certain anti-competitive map, Journal of Computational Analysis and Applications, 2019

28.E. Bešo, S. Kalabušić, N. Mujić and E. Pilav, "Neimark-Sacker bifurcation and stability of a certain class of a host-parasitoid models with a host refuge effect", *International Journal of Bifurcation and Chaos*, 2019

29.S. Kalabušić, E. Bešo, N. Mujić and E. Pilav, Stability analysis of a certain class of difference equations by using KAM theory, *Advances in Difference Equations*, 2019

30. S. Kalabušić, M.R.S. Kulenović and M.Mehuljić, Global Dynamics of Monotone Second Order Difference Equation, *Journal of Computational Analysis and Applications*, (to appear)

31. S. Kalabušić, E. Bešo, N. Mujić and E. Pilav, Stability of a certain class of a host-parasitoid models with a spatial refuge effect, *Journal of Biological Dynamics*, Voume 14, Issue 1, 1-31, 2019

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 jednadžbi 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

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 $x_{n+1} = \dfrac{\alpha + \delta x_{n-2}}{A + Bx_n}$, $n = 0,1,...$

- International Congress Massee'2003, September 15-21,2003, Borovets, Bulgaria.
  Speaker: Senada Kalabušić, On the Recursive sequence $x_{n+1} = \dfrac{\gamma x_{n-l} + \delta x_{n-k}}{Cx_{n-l} + Dx_{n-k}}$

- International Conference on Difference Equations, Special Functions and Applications Munich , 25-30 July, 2005. Speaker: Senada Kalabušić, On the Trichotomy bahavior 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
  $$x_{n+1} = p_n + \frac{x_{n-1}}{x_{n-2}}, n = 0,1,...$$
- 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, C e n t e r   o f   E x c e l l e n c e   f o r   A p p l i c a t i o n s   o f   M a t h e m a t i c s;
  Intensive course : Discrete Dynamical Systems and Difference Equations
  1. Prof. Dr. Ulrich Krause, Department of Mathematics,
     University of Bremen

  2. Prof. Dr. Senada Kalabušić, Department of Mathematics,
     University of Sarajevo, June 15, 2008 –June 22 2008

- Middletown Sectional Meeting of AMS (American Mathematical Society), October 11, Dynamics of Certain Anti-competitive Systems of Rational Difference Equations in the Plane ,

- 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 apllied mathematics, Mechanical faculty University of Sarajevo, Systems of difference equations with applications, 2011.
- DAAD   summer school of applied mathematics, Faculty of Science Unievrsity 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-Hercegovinian 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. Kulenovic and M. Mehuljic)

- 23 rd International Conference on Difference Equations, Timisoara, Romania 2017, Speaker: Senada Kalabušić, Global Dynamics of Monotone Second Order Difference Equations (joint work with M.R.S. Kulenovic and M. Mehuljic
- 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)

Books (in native language)

1. S. Kalabušić, Ćamila Ljubović , *Matematika za brucoše* , 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 Piric, *Linearne integralne jednadžbe*, Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2011.
4. Senada Kalabušić, Esmir Pilav, *Obične diferencijalne jednadžbe*, Prirodno-matematički fakultet, Univerzitet u Sarajevu, 2014.
5. Senada Kalabušić, Nacima Memić, Esmir Pilav, *Parcijalne diferencijalne jednadžbe,* 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 jednadžbe 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 jednadžbe i monotoni diskretni dinamički sistemi" („Difference equations and discrete dynamical systems", scientific project financed by Ministry of Science and Educationn 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 jednadžbi drugog reda sa kvadratnim članovima"(Invariant manifolds and global dynamics of certain frcational 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

jednadžbe sa kvadratnim članovima" (Global dynamics, bifurcations and Jula sets for some rational difference equations with quadratic terms", scientific project financed by Federal Ministry of Science and Education") , Federalno ministarstvo obrazovanja
- "Neimark-Sackerova bifurkacija I stabilnost određene klase *host-parasitoid* modela sa *host refuge*efektom"("Neimark-Sacker bifurcation of certain class of host-parasitoid model with host refuge effect",scientific project financed by Ministry of Science and Education of Sarajevo Canton)Kantonalno ministarstvo za obrazovanje, nauku i mlade, 2019.
Broj 11/05-14-27665- 1/19

PhD Students
1. Esmir Pilav, PhD thesis completed in 2011
2. Midhat Mehuljić, PhD thesis completed in 2015
3. Emin Bešo (advisors:Prof.E.Pilav and Prof.S.Kalabušić) in progress

Master Students

1. Nađa Šečerović, master thesis completed in 2008
2. Esmir Pilav, master thesis completed in 2009
3. Midhat Mehuljic, 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, 2013-2018
- 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 international 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 (www.pmf.unsa.ba/bms2018)
- Chair of the Organizing Committee ICDEA2020 (International Conference on
   Difference Equations www.pmf.unsa.ba/icdea2020), 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.

I 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 (2 years)