

## CURRICULUM VITAE

### Personal data:

- a. Name: Anna Soós
  - b. Date and place of birth: November 08, 1959; Hălchiu, Braşov
  - c. Address:
    - Office: Babeş-Bolyai University, Faculty of Mathematics and Computer Science,  
Str. Mihail Kogalniceanu nr. 1, 400084 Cluj-Napoca, Romania  
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400300 Cluj-Napoca
- e-mail: asoos@math.ubbcluj.ro

### Academic degrees:

- a. 1982 - Babeş-Bolyai University, Faculty of Mathematics - Cluj-Napoca, Romania - Title of the diploma work: Carathéodory type theorems. Adviser: Prof. Dr. Iosif Kolumbán.
- b. 1996 - Eötvös Loránd University, Faculty of Natural Sciences, Section Computer Science - Title of the diploma work: Fractals in high school.
- c. 2002, July 3 - Ph.D. - Babeş-Bolyai University, Faculty of Mathematics and Computer Science - Cluj-Napoca, Romania. - Title of the thesis: Random fractals using contraction methods in probabilistic metric spaces Adviser: Prof. Dr. Iosif Kolumbán

### University education:

- a. 1978 - 1982  
- Babeş-Bolyai University, Faculty of Mathematics - Cluj-Napoca, Romania
- b. 1994 - 1996  
- Eötvös Loránd University, Faculty of Natural Sciences, Section Computer Science
- c. 1996 - 2002 (Doctorate) - Babeş-Bolyai University, Faculty of Mathematics and Computer Science - Cluj-Napoca, Romania

### Professional background:

- a. 1982 - 1991  
- teacher of Mathematics - High School No.1. Tg. Secuiesc, Romania.
- b. 1991 - 1997  
- teacher of Mathematics - Székely Mikó High School Sf. Gheorghe, Romania.
- c. 1997 - 2005  
- lecturer - Babeş-Bolyai University, Faculty of Mathematics and Computer Science, Department of Numerical Analysis and Statistics, Cluj-Napoca.
- d. 2005-2011  
-associate professor- Babeş-Bolyai University, Faculty of Mathematics and Computer Science, Department of Numerical Analysis and Statistics, Cluj-Napoca.
- e. 2011-  
-associate professor- Babeş-Bolyai University, Faculty of Mathematics and Computer Science, Department of Hungarian Mathematics and Computer Science
- f. 2007-2012  
-vice dean of Faculty of Mathematics and Computer Science,  
2012-  
-vice rector for curriculum and Hungarian line of study

### Teaching experience:

- Probability theory
- Mathematical statistics
- Artificial Intelligence
- Logic and functional programming
- Stochastic processes and fractals
- Stochastic phenomena analysis
- Stochastic search

**Research interest:**

- deterministic and random fractals,
- stochastic processes, fractional Brownian motion
- homogenization on fractals
- stochastic analysis

**Editorial activities**

Secretar of Studia Universitatis Babeş-Bolyai, Mathematica, 2004-2008 Member of editorial board of Studia Universitatis Babeş-Bolyai, Mathematica, 2009-

**Membership:**

- Romanian Mathematical Society.
- SIAM
- Gesellschaft für Angewandte Mathematik und Mechanik.
- IMS Institute of Mathematical Statistics
- Bernoulli Society
- INFORMS/Applied Probability Society
- Hungarian Operational Research Society
- Romanian Society for Probabilists and Statisticians
- The Society for Hungarian Technical Science in Transylvania EMT
- Farkas Gyula Association for Mathematics and Informatics

**Conference organizer**

1. International Symposium on Numerical Analysis and Approximation Theory, Cluj-Napoca, 9-11 May 2002
2. 6th Joint Conference on Mathematics and Computer Science, MACS, Pécs, 12-15 July 2006.
3. XXVI. Seminar on Stability Problems for Stochastic Models, August 27 - September 2, 2006, Sovata-Bai, Romania, organized by Faculty of Informatics of the University of Debrecen, the Moscow State University, the Steklov Institute of Mathematics in Moscow and the Babeş-Bolyai University
4. NAAT2006, Numerical Analysis and Approximation Theory, Cluj-Napoca, July 5-8, 2006.
5. 18th International Symposium on Implementation and Application of Functional Languages IFL'06, September 4-6th 2006, Budapest, Hungary
6. Communication and information technology in mathematical education, joint master's programme of Constantine the Philosopher University in Nitra - Slovak Republic, Vienna University of Technology - Austria, Babeş-Bolyai University in Cluj-Napoca - Romania, South Bohemian University in České Budejovice - Czech Republic and University of Szeged - Hungary, 2005-2006
7. Central European Functional Programming, Summer School, Faculty of Mathematics and Computer Science Babeş-Bolyai University, June 25-30, 2007
8. Stochastic phenomena, International workshop and summer school, 24-28.05.2008. Cluj Napoca
9. Developing quality in mathematical education, COMMENIUS project yearly conference, 23-27.09.2008., Cluj Napoca
10. International Conference on Non-Euclidean Geometry and Its Applications, 7-th Bolyai-Lobachevsky-Gauss Conference, 2010.07. 5-9.

11. 8th Joint Conference on Mathematics and Computer Science, MACS 2010, Komarno
12. International Conference on Numerical Analysis and Approximation Theory, NAAT2010, Cluj, 23-26.09.2010.
13. 9th Joint Conference on Mathematics and Computer Science, MACS 2012, 9-12. 02.2012, Siófok
14. 140 éves a kolozsvári magyar nyelvű egyetemi oktatás/140 de ani de învățământ universitar in limba maghiară, Cluj, 1-5.10.2012
15. Inquiry-based learning in mathematics and science: PRIMAS project conference, Cluj, 2013.03.23-26.
16. DSL 2013, Central European Functional Programming, Summer School, Cluj, 8-19.07.2013
17. 10th Joint Conference on Mathematics and Computer Science, MACS 2014, 05.21-25.2014.
18. NAAT 2014, Numerical Analysis and Approximation Theory, Cluj, 09. 17-20.2014.
19. Transilvanian Students Scientific Conference, Kolozsvár, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012,2013,2014,2015, 2016, 2017, 2018,2019.
20. 11th Joint Conference on Mathematics and Computer Science, MACS 2016, Eger, 20-22.05. 2016.
21. The Challenges and Cultures of Change in Transylvania, 16th to 18th Centuries, Cluj Napoca, 9-10.12.2016.
22. 12th Joint Conference on Mathematics and Computer Science, MACS 2018, Sacuieu, 14-17.06. 2018.

#### **Reasearch experience**

- 1999-2000: member of the research project: Interpolatory, combinatory and probabilistic methods in approximation theory, project manager prof. dr. Gheorghe Coman, Romanian Ministry of Education, T23, 294
- 2001-2002: member of the research project: Nonlinear analysis, project manager prof. dr. Kolumbán József, "Arany János" Research Project, Budapest, Hungary
- 2001-2003: member of the research project: Approximations theory and numerical analysis, project manager prof. dr. Gheorghe Coman, WorldBank Project, cod 87, Cluj-Napoca, Romania
- 2001-2003: member of the research project: Approximation methods and numerical analysis, project manager prof. dr. Octavian Agratini, Romanian Ministry of Education, T82, cod 1072, Cluj-Napoca
- 2002-2003: member of the research project: Some dynamical systems with applications, project manager prof. dr. Kolumbán József, Sapientia Research Institute, Cluj-Napoca, Romania
- 2003-2004: project manager of the project: Fractal functions and applications, Sapientia Research Institute, Cluj-Napoca, Romania
- 2003-2004: member of the research project: Asymptotical analysis and variational problems, project manager prof. dr. Kolumbán József, Sapientia Research Institute, Cluj-Napoca, Romania
- 2004-2007: member of Leonardo Da Vinci project OIKOS, 2004-I/04/B/F/PP-154025
- 2004-2006: member of the research project: Approximation, numerical and probabilistic methods, project manager prof. dr. Octavian Agratini, Romanian Ministry of Education, T1, cod 355, Cluj-Napoca, Romania
- 2006-2009: member of the research project: VIASAN-CEEX, CANSCREEN - Sistem cu eficacitate sigura de control al calitatii diagnosticului in programul de screening al cancerului, Iuliu Hatieganu University of Medicine and Pharmaceutics and Babes-Bolyai University, Cluj-Napoca, Romania, 125/2006
- 2007-2010: local coordinator of the research project: Developing Quality in Mathematics Education II, 134312-DE-2007-CMP Commenius Project, Dortmund University, Germany
- 2010-2013: member of the research project PRIMAS, Promoting inquiry in mathematics and science education across Europe, FP7, GA nr.244380
- 2012-2013: coordinator of ERASMUS IP project, DSL2013, nr.10/31.08.2012

-2013-2016: member of the research project MASCIL (Mathematics and Science for Life), FP7, nr. 320696

**Study and research abroad:**

- 1) 1998-99 R ényi Institute, Budapest, PhD fellowship of Hungarian Academy of Science, (10 months)
- 2) 1999 Eötvös Loránd University, Budapest, Domus Hungarica Scientiarum et Artium research grant, (1,5 month).
- 3) 2000 XXX.International Probability School, Saint Flour, 2000.08.17.-09.02, the EMS fellowship
- 4) 2000 Ernst Moritz Arndt University Greifswald, (1 month) grant of Numerical Analysis and Statistic Department of Babes-Bolyai University
- 5) 2000/2001 Eötvös Loránd University, Budapest, Domus Hungarica Scientiarum et Artium research grant, (2 months).
- 6) 2001/2002 University od Szeged, research grand of the Hungarian Ministry of Education, (3 months)
- 7) 2002 Eötvös Loránd University, Budapest, CEEPUS fellowship (1 month)
- 8) 2002 Constantine the Philosophe” University, Nitra, CEEPUS fellowship, (1 month)
- 9) 2003 Eötvös Loránd University, Budapest, CEEPUS fellowship (1 month)
- 10) 2003-2006 Bolyai reasearch fellowship, ELTE, Budapest
- 11) 2004 Lisaboa University, Erasmus fellowship, 2004, 01-07.05
- 12) 2005 Technical University Wien, CEEPUS fellowship(1 month)
- 13) 2006 Technical University Kosice, CEEPUS fellowship(1 month)
- 14) 2006 Eötvös Loránd University, Budapest, Domus Hungarica Scientiarum et Artium fellowship (2 months)
- 15) 2007 Eötvös Loránd University, Budapest, Erasmus teaching mobility
- 16) 2008 Eötvös Loránd University, Budapest, Domus Hungarica Scientiarum et Artium fellowship
- 17) 2008 Debrecen University, Debrecen, ERASMUS teaching mobility
- 18) 2009 Johannes Kepler University Linz, CEEPUS fellowship (1 month)
- 19) 2013 Constantine the Philosopher University, Nitra, CEEPUS fellowship (1 month)
- 20) 2014 Polytechnical Engineering College, Subotica, Serbia, CEEPUS fellowship(1 month)
- 21) 2015 University of Sarajevo, Bosnia and Herzegovina, CEEPUS fellowship(1 month)
- 22) 2015 University of Information Science and Technologies St. Paul the Apostle - Ohrid, Republic of Macedonia, CEEPUS fellowship (1 month)
- 23) 2016 Perm University, Perm, ERASMUS staff mobility
- 24) 2017 Bangseng University, Bangseng, ERASMUS teaching mobility
- 25) 2018 Hanoi University, Hanoi, Vietnam, ERASMUS teaching mobility
- 26) 2018 Charles University, Prague, CEEPUS fellowship
- 27) 2019 Jadvapur University, Kolkata, India, ERASMUS teaching mobility

**Visiting professor:**

1. 2009,2010(01 and 04), 2011 AUST, Afrikan University of Science and Technology, Abuja, Nigeria

**Invited lectures:**

1. 1999: J. Safarik University Kosice, ”Fractal function and interpolation”
2. 2002 University of Szeged, Department of Mathematics and Informatics, ”Fractal functions and interpolation”
3. 2002 ”Eötvös Loránd” University, Budapest, Department of Numerical Analysis, ”Invariant sets in probabilistic metric spaces”
4. 2003 University of Szeged, Department of Mathematics and Informatics, ”Random fractals”

5. 2004 Univ. "Eötvös Lorand", Budapest, Faculty of Informatics, Stochastic processes and fractals, for PhD students, [10 lectures]
6. 2004 University of Lisbon, Mathematical Institute: "Homogenization on fractals"
7. 2004 Babes-Bolyai University Cluj-Napoca, "Fractal functions and applications"
8. 2005 Technical University Wien, Faculty of Discrete Mathematics and Geometry, "Two scale convergence on fractals"
9. 2006 Technical University, Kosice, "Wavelet approximation of solutions of SDE"
10. 2006 Technical University Wien, CEI master course, "Fractals in mathematical education" [10 lectures]
11. 2007 Univ. "Eötvös Lorand", Budapest, Faculty of Informatics, "Introduction to fractal analysis", for PhD students, [6 lectures]
12. 2009 Johann Kepler University Linz, Department of Informatics, "Stochastic processes and fractals", 6 lectures for master students
13. 2014 Differentiable Ergodic Theory, Dimension Theory and Stable Foliations, 28.09.-04.10.2014, Mathematisches Forschungsinstitut Oberwolfach, "Approximation of solutions of SDE driven by fractional Brownian motion"
14. 2015 Minőségfejlesztés a felsőoktatásban - Idegen nyelvű képzések, 23-24.04.2015, Budapest, "The internationalization of higher education in EUROPE"
15. 2015 The Annual Conference on Cultural Diplomacy, Building Bridges of Peace and Reconciliation in Times of Greater Global Insecurity Berlin, 10-13.12. 2015, "Universities - effective agent of cultural diplomacy"

**Conference lectures:**

1. Third Joint Congress of BBU and ELTE, Visegrád, 1999.06.6-12: "Invariant sets in E-spaces" (with J.Kolumbán)
2. "Tiberiu Popoviciu" Itinerant Seminar of functional Equations, Approximation and Convexity, Cluj-Napoca, 2000.05.23-28.: Optimization of fractal interpolation functions with genetic algorithms"
3. L'école d'été de probabilité de Saint Flour, Saint Flour, 2000.08.17-08.02. "Invariant sets of random variables"
4. "Tiberiu Popoviciu" Itinerant Seminar of functional Equations, Approximation and Convexity, Cluj-Napoca, 2000.10. 26-29, "Fractal analysis of normal and pathological body temperature graphs by children" ( with Ellenes Zoltán)
5. The 4th Conference of the Romanian Probability and Statistics Society, Bucuresti, 2001.02.23-24, "Hutchinson's type theorems in probabilistic metric spaces"
6. "Fractal in Graz", 2001.06.04-09, Graz, "Selfsimilar fractal functions using contraction method in probabilistic metric spaces" (with I. Kolumbán)
7. ICNODEA (International Conference on Nonlinear Operators, Differential equations and Applications ), 2001.09.12-15, Cluj-Napoca, "Brownian motion using contraction method in probabilistic metric spaces"
8. The 5th Conference of the Romanian Probability and Statistics Society, Bucuresti, 2002.02.22-23, "Selfsimilar processes using contraction method in probabilistic metric spaces"
9. "Fractal 2002", Granada, 2002.03.17-20, "Fractal functions using contraction method in probabilistic metric spaces" (with I. Kolumbán)
10. International Symposium on Numerical Analysis and Approximation Theory, Cluj-Napoca, 9-11.05.2002, "Multiresolution analysis based on Brownian motion"
11. XV. DIDMATTECH 2002, Nitra, 27-28.08. 2002, Pedagogical Faculty of University of Constantine the Philosopher, "Fractal functions and interpolation"
12. "Dynamic Days", Heidelberg, 15-19.07. 2002. "Stochastic multiresolution analysis" (with J.Kolumbán)
13. I.S.A.M.A. 2002, Freiburg, 22-26.2002. "Fractal analysis of architectural objects" (with Antonio Pedro Lima )

14. ICAM 2002, Borsa, 10-13.10.2002. "Fractal stochastic process"
15. Fractal Geometry & Stochastics III Friedrichroda (Germany) March 17-22, 2003, "Selfsimilar random fractals and applications"
16. "Random walk in random environment", Cambridge, 24-28.08.2003.
17. 5th Joint Conference on Mathematics and Computer Science ELTE and BBU, Debrecen, 2004, "Wavelet Approximation of the Solutions of Some Stochastic Differential Equations" (with H Lisei)
18. Dinamikus rendszerek és káosz, Csikszereda, 2005.03.04-05, "Komplex dinamikus rendszerek".
19. GAMM2005, Luxemburg, 18.03-0104.2005, "Two scale convergence and IFS"
20. Recent Trends in Homogenization, Roma, 2005. 05.23-27, "IFS and Two-scale convergence".
21. 2nd Conference on Analysis and Probability on Fractals, Cornell University, Ithaca, 2005.06.01.-05, "IFS and Homogenization". nhelyettes
22. Fractal Analysis, Eisenach, 11-17.09.2005, "Iterated function system and homogenization".
23. Stochastic Analysis and Probability, Marrakech, 10-17.12. 2005, "Wavelet approximation of solutions of stochastic differential equations".
  
24. NAAT2006, Kolozsvár, 5-8.0.7.2006., "Numerical solution of some homogenization problem"
25. XXVI. International Seminar on Stability Problems for Stochastic Models", 27.08.27-02.09.2006, Szováta, "Stochastic Two Scale Convergence and Iterated Function System"
26. Analysis on Fractals, Kyoto, 4-8.09.2006, "Approximation of solution of SDE driven by generalized fractional Brownian motion"
27. ICAI 2007 - 7th International Conference on Applied Informatics, Eger, Hungary January 28-31 2007, "Approximation of solutions of SDE driven by multifractional Brownian motion"
28. The 12th International Conference on Applied Stochastic Models and Data Analysis (ASMDA 2007), Chania, Crete, Greece, May 29, 30, 31 and June 1, 2007, "Stochastic Fractal Interpolation Function and its Applications to Fractal Analysis of Normal and Pathological Body Temperature Graphs by Children"
29. 6th International Congress on Industrial and Applied Mathematics, ICIAM 2007, Zurich, Switzerland, 16-20 July, "Stochastic homogenization on selfsimilar structures"
30. 2008 International Workshop on Applied Probability (IWAP) Université de Technologie de Compiègne, France July 7-10 2008, "Stochastic Homogenization and Application to Cancer Modeling"
31. Fractals and Stochastic, Greifswald, 7-11.09.2008. "Stochastic Homogenization on Selfsimilar Fractals"
32. SPA 2009 - 33rd Conference on Stochastic Processes and Their Applications in Berlin, 27th - 31st July, 2009. "Spectral methods for solving SDE"
33. 10<sup>e</sup>me Colloque Franco-Roumain de Mathématiques Appliquées, 26-31 august 2010, Poitier, "Homogenization with iterated function system"
34. International Conference on Numerical Analysis and Approximation Theory, NAAT2010 (2010.09. 23-26), "Approximation of the solution of stochastic differential equations driven by multifractional Brownian motion"
35. Applied Stochastic Modeling and Data Analysis International Conference (ASMDA2011), Rome (Italy) June, 7-10, 2011. "Wavelet Approximation of the Solution of Stochastic Differential Equations Driven by Step Fractional Brownian Motion"
36. Természettudomány tanítása korszerűen és vonzóan, Budapest, 2011. augusztus 23.-25., "A matematika és természettudományok oktatása Erdélyben".
37. Second International GeoGebra Conference, 29-31 August 2011, Hagenberg, Austria, "Geogebra and stochastics, with Robu Judit.

38. Matematika és Informatika Didaktikai Konferencia (MIDK 2012), Lőcse, 2012.01.20-22., Út a rugó megnyúlásától az elsőfokú függvényig, with Éder Ottó.
39. MACS2012, Siófok, 2012.02.9-12., "Approximation of Stochastic Differential Equations Driven by Step Fractional Brownian Motion", with Robu Judit.
40. New qualifications and pathways, UNISO, Sighisoara, 2012.07.15-19, "University-Business Partnership for flexible learning"
41. Conferința națională de didactică, Problematizari in didactica generală si in didacticile speciale, Predeal, 19-21.09. 2012, "Metode bazate pe curiozitate in predarea matematicii"
42. 15th Applied Stochastic Models and Data Analysis International Conference, ASMDA 2013, June 25-28, 2013, Mataró (Barcelona), Spain, "Numerical approximation of solutions of stochastic differential equations driven by multifractional Brownian motion"
43. Játék és tudomány, Kolozsvár, 2013.10.18-19, "Játszani - s a játék titokban holt-súlyossá komolyodik: megrendelteként szabadnak lenni a legutolsó hangjegyig!"
44. Fractal Geometry and Stochastics V, Tabarz, 2014.03.23-28, "Stochastic spline fractal interpolation function".
45. The 9th International Conference on Applied Informatics, Eger, 2014.01.29 -02.01., "Application of Fixed Point Theorem in Probabilistic Metric space to Quicksort Algorithm", with J.Robu
46. Informatika a felsőoktatásban, Debrecen, 2014.08. 27-29., "Magyar informatikus-képzés a Babeş-Bolyai Tudományegyetemen", with J.Robu.
47. Diffusion on Fractals and Non-linear Dynamics, Bremen, 24.03.-02.04.2015, "Stochastic fractal interpolation function"
48. 14th International Conference on Mathematics and its Applications, Politehnica University of Timisoara, November 5-7. 2015, "Stochastic fractal interpolation with random variable as scaling parameters", with I.Somogyi.
49. Conference on university and business cooperation in Central Europe, Budapest, ian. 28-29. 2016. "Babeş-Bolyai University - an effective example of higher education and business co-operation".
50. International seminar on stability problems for stochastic models, Debrecen, 25-29.08.2017. "Self-similar random sets and fractals generalized contractions", with A. Petrusel
51. IWAP2018, Budapest, 18-21.06.2018., "Coupled random self-similar sets for contractions type operators"

10.01.2020.