

Curriculum Vitae

Surname: Kokologiannaki

Name: Chrysi

Father's name: George

Mother's name: Zambia

Date of birth: 7 February 1959

Place of birth: Chania, Crete

Nationality: Greek

Marital status: Married and mother of two children

Working address: Professor of the Department of Mathematics,
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Research Interests: Differential Equations, Special Functions, Orthogonal Polynomials and their applications.

1. Academic positions

1980: Bachelor, Department of Mathematics, School of Physics and Mathematics, University of Patras.

1981-1989: Scientific Collaborator, Department of Mathematics, School of Physics and Mathematics, University of Patras.

1989: PhD, Department of Mathematics, School of Sciences, University of Patras.
Ph.D. thesis: "Study of the zeros of mixed Bessel functions". Supervisor:
E.K.Ifantis.

1991-1996: Lecturer, Department of Mathematics, School of Sciences, University of Patras.

1996-2008: Assistant Professor, Department of Mathematics, School of Sciences, University of Patras.

2008-2018: Associate Professor, Department of Mathematics, School of Sciences, University of Patras.

2018-present: Professor, Department of Mathematics, School of Sciences, University of Patras.

2. Teaching courses

During the period 1981-1989, as a Scientific Collaborator of the Department of

Mathematics, I taught tutorial courses at the Department of Physics and Mathematics at the University of Patras.

Since 1989, I have taught the following:

Undergraduate courses

- Special Functions (Department of Mathematics)
- Operator Theory (Department of Mathematics).
- Integral Equations (Department of Mathematics)
- Ordinary Differential Equations I (Department of Mathematics).
- Ordinary Differential Equations II (Department of Mathematics).
- Real Analysis II (Department of Mathematics)
- Mathematics I (Department of Chemistry).
- Mathematics II (Department of Chemistry).
- General Mathematics I (Department of Geology).
- General Mathematics II (Department of Geology).
- Functional Analysis: Spaces and Operators (Department of Mathematics).

Postgraduate Courses (Department of Mathematics)

- Special Functions
- Applied Analysis I
- Functional and Spectral Analysis
- Qualitative Theory of Differential Equations
- Industrial Mathematics I
- Industrial Mathematics II
- Mathematical Physics

3. Supervisor of thesis

a) Supervisor of undergraduate diploma thesis of 14 (fourteen) undergraduate students of the Department of Mathematics, in the area of Differential Equations or/and Special Functions.

b) Supervisor of master thesis in the area of Applied Mathematics of the following postgraduate students of the Department of Mathematics:

- Nikopoulou Maria (2004), "About the associated orthogonal polynomials".
- Kolovos Kyriakos (2005), "Continuous fractions and orthogonal polynomials".

- Lois Athanasios (2006), "Bessel Functions and Orthogonal polynomials with More than One Variable".
- Kostopoulos Dimitrios (2007) " Gauss integration rule and orthogonal polynomials".
- Dimaresi Eleni (2008), "Ordinary Differential Equations of Fractional order".
- Rizos Dimitrios (2010), "Mittag-Leffler Functions".
- Mavridis Andreas (2012), "Properties of Modified Bessel Functions".
- Sourla Vassiliki (2013),: "k-Gamma and k-beta functions".
- Moloni Sophia (2015),: "Application of Fractional Calculus in Pharmacokinetics".
- Papadima Niki (2015), "q-Gamma functions".
- Bakali Eleni (2016), "Geometric properties of generalized Bessel functions".
- Papaioannou Maria (2018), "Zeros of derivatives of Bessel functions".

c) Supervisor of the Ph.D. thesis of Dimitrios Rizos, entitled: "Study of Complex Polynomials and Orthogonal Polynomials of Two Variables". (Date of Dissertation: 01/10/2018).

4. Member of committees

- a) One of the three members of the examination committee for master thesis of 12 (twelve) postgraduate students of the Department of Mathematics.
- b) One of the three members of the advisor committee for Ph.D thesis of three postgraduate students of the Department of Mathematics. Since 25-09-2018 , I have acted as one of the three members for Ph.D. thesis of a postgraduate student of the Hellenic Open University.
- c) One of the seven members of the examination committee for Ph.D thesis of 5 (five) postgraduate students, in University of Patras, University of Ioannina and Democritus University of Thrace.
- d) External examiner of Ph.D Thesis of 4 (four) Candidate Doctor in Pakistan, in the period from 2011 to 2017.

5. Member of scientific journals

1. Member of **Editorial Board** of:

- Journal of Applied Mathematics, Statistics and Informatics, (JAMSI) (from 2012)
- Nonlinear Dynamics and Systems Theory (from 2011).

2. **Reviewer** in Mathematical Reviews of the American Mathematical Society and Zentralblatt Math. Database

3. **Referee** in:

- Bulletin of the Greek Mathematical Society
- Ovidius University's Scientific Annals, Mathematica Series
- Archivum Mathematicum
- Mathematica Slovaca
- Applied Mathematics and Computation
- Journal of Applied Mathematics, Statistics and Informatics, (JAMSI)
- Journal of Inequalities and Applications
- Journal of Mathematical Analysis and Applications
- Central European Journal of Mathematics
- Konuralp Journal of Mathematics

4. **Quest co-editor** of a special volume of the scientific journal "Advances in Dynamical Systems and Applications", (2013), due to the conference "International Conference on Differential Equations, Differential Equations and Special Functions. In Memory of Panayiotis D.Sifarakis".

5. **Member of Conference committee**

a) **Member of the Organizing Committee** of the following Conferences, held at the University of Patras:

- "4th Panhellenic Congress of Mathematical Analysis", 23-24 September 1994, Department of Mathematics.
- "Fifth International Symposium on Orthogonal Polynomials, Special Functions and Their Applications", September 20-24, 1999, University of Patras, Greece.
- "International Conference on Differential Equations and their Applications", July 1-5, 2002, University of Patras, Greece.

- "14th Panhellenic Congress of Mathematical Analysis", 18-19 May 2012, Department of Mathematics

- "International Conference on Differential Equations, Difference Equations and Special Functions", September 3-7, 2012, University of Patras, Greece.

b) Organizer of the following daily workshops with title: "Differential Equations and their Applications" at the Department of Mathematics, University of Patras,

- 1st Workshop, 20/02/2014

- 2nd Workshop, 27/09/2014

- 3rd Workshop, 03/10/2015

- 4th Workshop, 30/09/2016

- 5th Workshop, 30/09/2017

- 6th Workshop, 16/02/2019

c) Member of the Scientific Committee of Conferences:

- "14th Panhellenic Congress of Mathematical Analysis", 18-19 May 2012, Department of Mathematics, University of Patras.

- "International Conference on Differential Equations, Difference Equations and Special Functions", September 3-7, 2012, University of Patras, Greece.

- "29th Hellenic Mathematical Society Conference", 9-11 November 2012, Kalamata, Greece.

- "30th Hellenic Mathematical Society's Hellenic Conference", 8-9 November 2013, Karditsa, Greece.

6. Other duties in the Department of Mathematics

a) Director of the Study Centre "Differential Equations and Applications: Panagiotis Siafarikas" of the Division of Applied Mathematics of the Department of Mathematics, since 2012. The main purpose of the Study Centre is to demonstrate different applications of differential equations in several scientific areas to undergraduate and postgraduate students. Since the academic year 2014-2015, we have been organizing every year a daily workshop for that reason.

b) Director of the Postgraduate Studies Program of the Department of Mathematics "Mathematics and Modern Applications", from the academic year 2013-2014 until 2016-2017.

c) Head of Department of Mathematics from 1/12/2017 to 31/08/2020.

7. Participation in Conferences

a) **Quest speaker** at:

- "Greek Mathematical Society (Patras)".
- "Seminar of the Department of Mathematics" at the Masaryk University in Brno, Czech Republic, which I visited during January 2002 (for 10 days) and in January 2013 (for 15 days) through the Erasmus program.
- "The 9th Conference on Applied and Industrial Mathematics, CAIM 2001", October 12-14, 2001, University of Pitesti, Romania.
- Mathematics Conference on "Mathematics, Applications, Didactics and Their History", 7-8 / 3/2014, Heraklion, Crete.
- "General Seminar of the Department of Mathematics", University of Ioannina, 4/3/2015.
- "Conference on Differential Equations and Applications", September 4-7, 2017, Brno University of Technology, Czech Republic.

b) **speaker** at:

- "General Seminar" of the Department of Mathematics of the University of Patras.
- "Applied Analysis Seminar" of the Department of Applied Analysis of the Department of Mathematics of the University of Patras.
- "Differential Equations Seminar" of the Panagiotis Siafarikas Differential Equations and Applications Department.
- the following Conferences / Workshops, in Greece and abroad:
 - 12 "Panhellenic Congress of Mathematical Analysis" in different universities in Greece.
 - "Fifth International Symposium on Orthogonal Polynomials, Special Functions and their Applications, OPSFA", September 20-24, 1999, University of Patras, Greece.
 - "International Conference on Mathematical Analysis and its Applications", August 24-27, 2000, NTUA, Athens, Greece.

- "Sixth International Symposium on Orthogonal Polynomials, or Special Functions and Their Applications, OPSFA", June 18-22, 2001, Rome, Italy.
- "Third Workshop on Advanced Special Functions and Related Topics in Differential Equations", June 24-29, 2001, Melfi, Italy.
- "International Conference on Differential, Differential Equations and their Applications", July, 1-5, 2002, University of Patras.
- "The 10th Conference on Applied and Industrial Mathematics, CAIM 2002", October 11-13, 2002, University of Pitesti, Romania.
- "Seventh International Symposium on Orthogonal Polynomials, Special Functions and Their Applications, OPSFA", August 18-22, 2003, Copenhagen, Denmark.
- "International Conference on Differential Equations, Difference Equations and Special Functions", September 3-7, 2012, University of Patras, Greece.
- 6 Workshops on "Differential Equations and Applications", Department of Mathematics, University of Patras.

8. Scientific papers

Number of citations: 222 (Google Scholar) (1/3/2019).

1) C.G.Kokologiannaki, "Study of the zeros of mixed Bessel functions" Ph.D. Thesis, Department of Mathematics, University of Patras, 1989.

2) [IKK1991] E.K.Ifantis, C.G. Kokologiannaki and C.B.Kouris, On the positive zeros of the second derivative of Bessel functions, *J. Comp. Appl. Math.*, Vol. 34 (1991), 21-31.

3) [KS1991] C. G. Kokologiannaki and P. D. Siafarikas, Non existence of complex and purely imaginary zeros of a transcendental function involving Bessel functions, *Zeitsc. Anal. Anwend. (ZAA)* Vol. 10, (1991), 563-567.

4) [KSK1992] C. G. Kokologiannaki, P. D. Siafarikas and C. B. Kouris, On the complex zeros of $H_{\mu}(z)$, $J_{\mu}'(z)$, $J_{\mu}''(z)$ for real or complex order, *J. Comp. Appl. Math.* Vol. 40 (1992), 337-334.

5) [KS1993] C. G. Kokologiannaki and P. D. Siafarikas, An alternative proof of the monotonicity of $j_{\nu,1}$, Vol. 1, *Bollettino U.M.I.* Vol. 7-A (1993), 373-376.

6) [IK1993] E.K.Ifantis and C.G.Kokologiannaki, Location of the complex zeros of Bessel functions and Lommel polynomials, *Zeitsc. Anal. Anwend. (ZAA)* Vol. 12, 4 (1993), 605-612.

- 7) [KMS1994] C. G. Kokologiannaki, M. E. Muldoon, and P. D. Siafarikas,** A Unimodal Property of Purely Imaginary zero of Bessel and related functions, *Canad. Math. Bull.* Vol. 37 (3) (1994), 365-373.
- 8) [KS1996] C. G. Kokologiannaki and P. D. Siafarikas,** Convexity of the largest zero of the Ultraspherical Polynomials, *Integral Transforms and Special functions* Vol. 4 (3) (1996), 275-278.
- 9) [IKS1996] E. K. Ifantis, C. G. Kokologiannaki and P. D. Siafarikas,** Newton Sum rules and Monotonicity Properties of the Zeros of Scaled co-recursive Associated Polynomials, *Meth. Appl. Anal.* Vol. 3(4) (1996), 486-497.
- 10) [IKS2002] E. K. Ifantis, C. G. Kokologiannaki and P. D. Siafarikas,** On the support of the measure of orthogonality of a class of orthogonal polynomials, *Applied Mathematics and Computation* Vol. 128 (2002), 275-288.
- 11) [K2002] C.G.Kokologiannaki,** Convexity of the square of the first zero of the derivative of Bessel function, *Integral Transforms and Special Functions* Vol. 13 (2002), 471-480.
- 12) [K2003] C.G.Kokologiannaki,** Absence of the point spectrum in a class of tridiagonal operators, *Applied Mathematics and Computation* Vol. 136 (2003), 131-138.
- 13) [IK2003] E. K. Ifantis, C. G. Kokologiannaki,** Stieltjes transforms of a class of probability measures, *Journal of Computational and Applied Mathematics* Vol. 153 (2003), 249-258.
- 14) [KSS2003] C. G. Kokologiannaki, P. D. Siafarikas and I. D. Stabolas,** Monotonicity properties and inequalities of the zeros of q-associated polynomials, *Nonlinear Analysis and Applications* , Vol. II, (2003), 671-726.
- 15) [KSS2006] C. G. Kokologiannaki, P. D. Siafarikas and I. D. Stabolas,** Newton sum rules of some associated orthogonal polynomials, *J. of Concrete and Applicable Mathematics* Vol. 4, No 1, (2006), 47-66.
- 16) [K2007] C. G. Kokologiannaki,** On the zeros of a class of analytic functions, *J. of Concrete and Applicable Mathematics* Vol. 5, No 3, (2007), 213-218.
- 17) [IKP2007] E.K.Ifantis, C.G.Kokologiannaki and E.Petropoulou,** Limit points of eigenvalues of truncated unbounded tridiagonal operators, *Central European Journal of Mathematics*, 5 (2), (2007), 335-344
- 18) [K2009] C.G.Kokologiannaki,** Combinations of orthogonal polynomials, *International Journal of Pure and Applied Mathematics*, 50 (2009), No 1, 111-123.

- 19) [K2010] C.G.Kokologiannaki**, Properties and Inequalities of Generalized k-Gamma, Beta and Zeta Functions, *International Journal of Contemporary Mathematical Sciences*, Vol. 5, No 13-16, (2010), 653-660.
- 20) [K2011] C.G.Kokologiannaki**, Monotonicity of functions involving q-Gamma functions, *Mathematical Inequalities and Applications*, 14, 2, (2011), 413-419.
- 21) [K2012] C.G.Kokologiannaki**, Bounds for functions involving ratios of modified Bessel functions, *Journal of Mathematical Analysis and Applications*, 385, 2, (2012), 737-742.
- 22) [K2012] C.G.Kokologiannaki**, Corrigendum to "Bounds for functions involving ratios of modified Bessel functions, *J. Math. Anal. Appl.*, 385, 2, (2012), 737-742" , *Journal of Mathematical Analysis and Applications*, 385, (2012), 645.
- 23) [KR2012] C.G.Kokologiannaki and D.Rizos**, On the zeros of polynomials satisfying a three-term recurrence relation with complex coefficients, *Journal of Inequalities and Special Functions*, 3, 3, (2012) 29-33.
- 24) [KP2012] C.G.Kokologiannaki and E.N.Petropoulou**, On the zeros of $J_\nu''''(x)$, *Integral Transforms and Special Functions*, (2012), DOI: 10.1080/10652469.2012.720253
- 25) [KK2013] C.G.Kokologiannaki and V. Krasniqi**, Some properties of the k-Gamma Function, *Le Matematiche*, 68, 1, (2013) 13-22.
- 26) [KS2013] C.G.Kokologiannaki and V.D.Sourla**, Bounds for k-Gamma and k-Beta functions, *Journal of Inequalities and Special Functions*, 4,3, (2013) 1-5.
- 27) [BK2013] M. Bartusek and C.G.Kokologiannaki**, Monotonicity properties of oscillatory solutions of differential equation $(a(t)|y'|^{p-1}y)' + f(t,y,y')=0$, *Archivum Mathematicum, (BRNO)*, 49, (2013), 199-207.
- 28) [KK2014] C.G.Kokologiannaki and V. Krasniqi**, q-completely monotonic and q-Berstein functions, *Journal of Applied Mathematics , Statistics and Informatics*, 10,2, (2014), 43-50.
- 29) [KL2014] C.G.Kokologiannaki and A. Laforgia**, Simple proofs of classical results on zeros of $J_\nu(x)$ and $J_\nu'(x)$, *Tbilisi Mathematical Journal (Special Issue on Theory of Inequalities)*7 (2), (2014) 35-39.
- 30) [K2016] C.G.Kokologiannaki**, Some properties of $\Gamma_{q,k}(t)$ and related functions, *International journal of Contemporary Mathematical Sciences* , 11, 1, (2016) 1-8.

31) [KPR2016] C.G.Kokologiannaki, E.Petropoulou and D. Rizos, Tridiagonal operators and zeros of polynomials in two variables, *Abstract and Applied Analysis*, (2016) Article ID 6301413.

32) [BKP2017] A. Baricz, C.G.Kokologiannaki and T. Pogany, Zeros of Bessel function derivatives, *Proceedings of American Mathematical Society*, (2017) DOI: <https://doi.org/10.1090/proc/13725>

33) [MKRAI2017] S.Mubeen, C.G.Kokologiannaki, G.Rahman, M.Arshad and Z.Iqbal, Properties of generalized hypergeometric k-functions via k-fractional calculus, *Far East Journal of Applied Mathematics*, 96, 6, (2017), 351-372.

34) [KR2018] C.G.Kokologiannaki and D. Rizos, Orthogonal polynomials in two variables: five-term recurrence relation and related results, *Journal of Inequalities and Special Functions*, 9 (3), (2018), 19-27.

9. Other scientific activities

a) [K2003] C.G.Kokologiannaki, *A Functional Analytical Method for the Study of the Zeros of Orthogonal Polynomials*, Recent Advances in Mechanics and Related Fields, Special Volume in Honor by Professor Constantine L. Goudas, Edited by: G. Katsiaris, V. Markellos and J. Hadjidemetriou, Patras (2003).

b) [IKP2013] E.K.Ifantis, C.G.Kokologiannaki and E.N.Petropoulou, *Panayiotis D. Siafarikas: His Life and Work*, Adv. Dynam. Syst. Appl. , vol. 8 (2) (2013) 169-179.

c) Participation in the Open Courses of the University of Patras

Two courses, undergraduate level:

- Ordinary Differential Equations I (<https://eclass.upatras.gr/courses/MATH940>)
- Special Functions (<https://eclass.upatras.gr/courses/MATH938>)

d) "Operator Theory" , Undergraduate Course

(<https://eclass.math.upatras.gr/modules/document/?course=MATHDEP171>)

e) "Laplace Transformation", notes for undergraduate courses "Ordinary Differential Equations II" and "Integral Equations".