CURRICULUM VITAE Michael (Michail) Th. Rassias

Contact Information

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Personal data

Date of birth: August 3, 1987, Athens, Greece Nationality: Greek

Education

Ph.D. from ETH-Zürich, Department of Mathematics, 2011-2014. Dissertation title: *Analytic investigation of cotangent sums related to the Riemann zeta function*. Thesis advisors: Professor Emmanuel Kowalski and Professor Helmut Maier.

Master of Advanced Study in Mathematics from the University of Cambridge, 2010-2011.

Diploma from the School of Electrical and Computer Engineering, National Technical University of Athens (NTUA), 2005-2010.

Research Interests

My current research interests lie in mathematical analysis, computational mathematics, analytic number theory and more specifically in exponential / trigonometric sums, zeta functions, the Riemann Hypothesis, approximation theory, functional equations, analytic inequalities and cryptography.

Citations:1023 (Google Scholar) with h-index: 18310 by 134 authors (MathSciNet)

Academic Employment

• September 1, 2015 – today

For this period I have been a researcher with teaching duties at the Institute of Mathematics of the University of Zürich. More specifically:

- For the period January 1, 2018 until August 31, 2019 I was a Latsis Foundation Senior Fellow at the University of Zürich (co-funded by the University of Zürich and the Latsis Foundation).
- For the academic year 2016-2017 I was a Forschungskredit researcher at the Institute of Mathematics of the University of Zürich, funded by the so-called Forschungskredit research grant of the University of Zürich.
- September 1, 2015 today For this period I am also a visiting researcher at the Program in Interdisciplinary Studies of the Institute for Advanced Study, Princeton.
- Academic year 2014-2015

During the academic year 2014-2015, I was a postdoctoral researcher at the Department of Mathematics of Princeton University and the Department of Mathematics of ETH-Zürich, conducting research at Princeton with support granted from ETH-Zürich. While at Princeton, I collaborated with John F. Nash, Jr. for the preparation of the volume entitled "Open Problems in Mathematics", Springer, 2016.

Publications

I. Papers / Articles

In Journals

- 1. (with H. Maier) On the maximum of cotangent sums related to the Riemann Hypothesis in rational numbers in short intervals, arXiv:2101.01089.
- 2. (with H. Maier) Cotangent sums related to the Riemann Hypothesis for various shifts of the argument, Canadian Mathematical Bulletin, 63(3)(2020), 522-535.
- 3. (with M. A. Noor and K. I. Noor) *New Trends in General Variational Inequalities*, Acta Applicandae Mathematicae, 170(1)(2020), 981-1064.
- 4. (with Q.-L. Dong and S. He) *General splitting methods with linearization for the split feasibility problem*, Journal of Global Optimization (to appear).
- 5. (with B. Yang and Andrei Raigorodskii) *A New Hardy-Mulholland-Type Inequality with a Mixed Kernel*, Advances in Operator Theory (to appear).
- 6. (with B. Yang and Andrei Raigorodskii) *On a More Accurate Reverse Hilbert-Type Inequality in the Whole Plane*, Journal of Mathematical Inequalities (to appear).

- 7. (with B. Yang) *Equivalent Conditions of a Reverse Hilbert -Type Integral Inequality in the Whole Plane and Applications*, Applicable Analysis and Discrete Mathematics (to appear).
- 8. (with C. Park) *Hom-derivations in C*-ternary algebras*, Acta Mathematica Sinica, English Series, 36(9)(2020), 1025-1038.
- 9. (with S.-M. Jung, K.-S. Lee and S.-M. Yang) *Approximation Properties of Solutions of a Mean Value-Type Functional Inequality, II,* Mathematics, 2020, 8, 1299; doi:10.3390/math8081299
- (with B. Yang and Andrei Raigorodskii) On Hardy-Type Integral Inequalities in the Whole Plane Related to the Extended Hurwitz-Zeta Function, Journal of Inequalities and Applications, 2020, 94 (2020). https://doi.org/10.1186/s13660-020-02365-1.
- 11. (with H. Maier) *Distribution of a cotangent sum related to the Nyman-Beurling criterion for the Riemann Hypothesis*, Applied Mathematics and Computation, 363(15)(2019), https://doi.org/10.1016/j.amc.2019.124589.
- 12. (with B. Yang and Andrei Raigorodskii) *On the Reverse Hardy -Type Integral Inequalities in the Whole Plane with the Extended Riemann-Zeta Function*, Journal of Mathematical Inequalities, 14(2)(2020), 525–546.
- (with V. Gupta and D. Agrawal) *Quantitative Estimates for Differences of Baskakov-type Operators*, Complex Analysis and Operator Theory, 13(8)(2019), 4045-4064.
- (with C. Park) Additive functional equations and partial multipliers in C*algebras, Revista de la Real Academia de Ciencias Exactas, Serie A. Matemáticas, 113(3)(2019), 2261-2275.
- 15. (with H. Maier) *Explicit estimates of sums related to the Nyman-Beurling criterion for the Riemann Hypothesis*, Journal of Functional Analysis, 276(2019), 3832-3857.
- 16. (with B. Yang) On an Equivalent Property of a Reverse Hilbert-Type Integral Inequality Related to the Extended Hurwitz-Zeta Function, Journal of Mathematical Inequalities, 13(2)(2019), 315-334.
- 17. (with B. Yang) On a Hilbert-type integral inequality in the whole plane related to the extended Riemann zeta function, Complex Analysis and Operator Theory, 13(4)(2019), 1765-1782.
- (with B. Yang) A reverse Mulholland-type inequality in the whole plane with multi-parameters, Applicable Analysis and Discrete Mathematics, 13(1)(2019), 290-308.
- 19. (with M. R. Abdollahpour) *Hyers-Ulam stability of hypergeometric differential equations*, Aequationes Mathematicae, (93)(4)(2019), 691-698.
- 20. (with B. Yang) On a Hilbert-type integral inequality related to the extended Hurwitz zeta function in the whole plane, Acta Applicandae Mathematicae, 160(1)(2019), 67-80.
- 21. (with S. -M. Jung and D. Nam) *On the order of odd integers modulo 2^n*, Applicable Analysis and Discrete Mathematics, 13(2019), 619-631.
- 22. (with H. Maier) On the size of an expression in the Nyman-Beurling-Baez-Duarte criterion for the Riemann Hypothesis, Canadian Mathematical Bulletin, 61(3)(2018), 622-627.
- 23. (with B. Yang and A. Raigorodskii), *Two Kinds of the Reverse Hardy-Type Integral Inequalities with the Equivalent Forms Related to the Extended Riemann Zeta Function*, Applicable Analysis and Discrete Mathematics, 12(2018), 273–296.

- 24. (with B. Yang) Equivalent properties of a Hilbert-type integral inequality with the best constant factor related to the Hurwitz zeta function, Annals of Functional Analysis, 9(2)(2018), 282-295.
- 25. (with H. Maier) *Estimates of sums related to the Nyman-Beurling criterion for the Riemann Hypothesis*, Journal of Number Theory, 188(2018), 96–120.
- 26. (with H. Maier) Asymptotics for moments of certain cotangent sums for arbitrary exponents, Houston Journal of Mathematics, 43(4)(2017), 1235–1249.
- 27. (with Y. -H. Lee and S. -M. Jung) Uniqueness theorems on functional inequalities concerning cubic-quadratic-additive equation, Journal of Mathematical Inequalities, 12(1)(2018), 43–61.
- 28. (with B. Yang) A half-discrete Hilbert-type inequality in the whole plane related to the Riemann zeta function, Applicable Analysis, 97(9)(2018), 1505-1525.
- 29. *From a cotangent sum to a generalized totient function*, Applicable Analysis and Discrete Mathematics, 11(2017), 369–385.
- 30. (with H. Maier) *The maximum of cotangent sums related to Estermann's zeta function in rational numbers in short intervals*, Applicable Analysis and Discrete Mathematics, 11(2017), 166–176.
- 31. (with H. Maier) *Asymptotics for moments of certain cotangent sums*, Houston Journal of Mathematics, 43(1)(2017), 207-222.
- 32. (with B. Yang) *Equivalent conditions of a Hardy-type integral inequality related to the extended Riemann zeta function*, Advances in Operator Theory, 2(3)(2017), 237-256.
- 33. (with H. Maier) *Large gaps between consecutive prime numbers containing perfect k-th powers of prime numbers*, Journal of Functional Analysis, 272(2017) 2659-2696.
- (with H. Maier) *The ternary Goldbach problem with a prime and two isolated primes*, Proceedings of the Steklov Institute of Mathematics, 296(2017), 183-197. Also translated in Russian and published in Trudy Matematich. Instituta im. V.A. Steklova, 296(2017), 192-206.
- 35. (with H. Maier) Generalizations of a cotangent sum associated to the Estermann zeta function, Communications in Contemporary Mathematics, 18(1)(2016), 89 pages, DOI: 10.1142/S0219199715500789.
- 36. (with M. R. Abdollahpour and R. Aghayaria) *Hyers-Ulam stability of associated Laguerre differential equations in a subclass of analytic functions*, Journal of Mathematical Analysis and Applications, 437(2016), 605- 612.
- 37. (with H. Maier) *The rate of growth of moments of certain cotangent sums*, Aequationes Mathematicae, 90(3)(2016), 581- 595.
- 38. (with H. Maier) *Large gaps between consecutive prime numbers containing square-free numbers and perfect powers of prime numbers*, Proceedings of the American Mathematical Society, 144(2016), 3347 3354.
- 39. (with B. Yang) *On a Hardy-Hilbert-type inequality with a general homogeneous kernel*, International Journal of Nonlinear Analysis and Applications, 7(1)(2016), 249-269.
- 40. (with H. Maier) *The order of magnitude for moments for certain cotangent sums*, Journal of Mathematical Analysis and Applications, 429(1)(2015), 576-590.

- 41. (with B. Yang) A Hilbert-type integral inequality in the whole plane related to the hypergeometric function and the Beta function, Journal of Mathematical Analysis and Applications, 428(2)(2015), 1286-1308.
- 42. (with S. -M. Jung and C. Mortici) *On a functional equation of trigonometric type*, Applied Mathematics and Computation, 252(2015), 294-303.
- 43. (with C. Mortici) *On the growth rate of divergent series*, Journal of Number Theory, 147(2015), 499–507.
- 44. On the representation of the number of integral points of an elliptic curve modulo a prime number, The Ramanujan Journal, Springer, 36(3)(2015), 483–499.
- 45. (with B. Yang) On a multidimensional Hilbert-type integral inequality associated to the Gamma function, Applied Mathematics and Computation, 249(2014), 408-418.
- 46. (with C. Mortici and S. -M. Jung) On the stability of a functional equation associated with the Fibonacci numbers, Abstract and Applied Analysis, Volume 2014 (2014), Article ID 546046, 6 pages.
- 47. (with B. Yang) On a multidimensional half-discrete Hilbert-type inequality related to the hyperbolic cotangent function, Applied Mathematics and Computation, 242(2014), 800–813.
- 48. (with S. -M. Jung) *A linear functional equation of third order associated to the Fibonacci numbers*, Abstract and Applied Analysis, Volume 2014 (2014), Article ID 137468, 7 pages.
- 49. *A cotangent sum related to zeros of the Estermann zeta function*, Applied Mathematics and Computation, 240(2014), 161–167.
- 50. (with S. -M. Jung and D. Popa) *On the stability of the linear functional equation in a single variable on complete metric groups*, Journal of Global Optimization, 59(2014), 165–171.
- 51. (with Y. -H. Lee and S. -M. Jung) *On an n-dimensional mixed type additive and quadratic functional equation*, Applied Mathematics and Computation, 228(2014), 13–16.
- 52. (with B. Yang) *A multidimensional half-discrete Hilbert-type inequality and the Riemann zeta function*, Applied Mathematics and Computation, 225(2013), 263–277.
- 53. (with B. Yang) *On half-discrete Hilbert's inequality*, Applied Mathematics and Computation, 220(2013), 75–93.
- 54. (with G. V. Milovanović) Some properties of a hypergeometric function which appear in an approximation problem, Journal of Global Optimization, 57(2013), 1173–1192.
- 55. (with P. Mihăilescu) *Public key cryptography, number theory and applications*, Newsletter, European Mathematical Society, 86(2012), 25–30.

In collected volumes

- 1. (with H. Maier), *Prime avoidance property of k-th powers of prime numbers with Beatty sequences*, In: Discrete Mathematics and Applications, Springer (ta appear)
- 2. (with B. Yang and A. Raigorodskii), *On a Half-Discrete Hilbert-Type Inequality in the Whole Plane with the Kernel of Hyperbolic Secant Function Related to the Hurwitz Zeta Function*, In: Trigonometric Sums and their Applications, Springer, 2020, 229-259.

- 3. (with H. Maier and A. Raigorodskii), *The maximum of cotangent sums related to the Nyman-Beurling criterion for the Riemann Hypothesis*, In: Trigonometric Sums and their Applications, Springer, 2020, 149-158.
- 4. (with A. Raigorodskii), *Maier's Matrix Method and irregularities in the distribution of prime numbers*, In: Irregularities in the Distribution of Prime Numbers, Springer, 2018, 165-186.
- 5. (with B. Yang) A half-discrete Hardy-Hilbert-type inequality with a best possible constant factor related to the Hurwitz zeta function, In: Progress in Progress in Approximation Theory and Applicable Complex Analysis: In the Memory of Q. I. Rahman, Springer, 2017, 183-218.
- 6. (with H. Maier) *Asymptotics and equidistribution of cotangent sums associated to the Estermann and Riemann zeta functions*, In: From Arithmetic to Zeta-Functions. Number Theory in Memory of Wolfgang Schwarz, Springer, Basel, 2016, 277-293.
- (with L. Tóth) Trigonometric representations of generalized Dedekind and Hardy sums via the discrete Fourier transform, In: Analytic Number Theory. In honor of Helmut Maier's 60th birthday, Springer, New York, 2015, 329-343.
- 8. (with B. Tams and P. Mihăilescu) *Current challenges for IT security with focus on Biometry*, In: Computation, Cryptography, and Network Security, Springer, New York, 2015, 461-491.
- 9. (with B. Yang) *Parameterized Yang-Hilbert-type integral inequalities and their operator expressions*, In: Computation, Cryptography, and Network Security, Springer, New York, 2015, 635-736.
- 10. (with B. Yang) *A multidimensional Hilbert-type integral inequality related to the Riemann zeta function*, In: Applications of Mathematics and Informatics in Science and Engineering, Springer, New York, 2014, 417–433.
- (with P. Mihăilescu) Computational number theory and cryptography, In: Applications of Mathematics and Informatics in Science and Engineering, Springer, New York, 2014, 349–373.

II. Books / Volumes

- 1. (with J. F. Nash, Jr.)(eds.), Open Problems in Mathematics, Springer, 2016.
- 2. (with A. Avila and Y. Sinai)(eds.), *Analysis at Large: Dedicated to the Life and Work of Jean Bourgain*, Springer, (under preparation).
- 3. (with A. Nikeghbali, P. Pardalos, and A. Raigorodskii)(eds.), *High Dimensional Optimization and Probability: With a view towards Data Science*, Springer (under preparation).
- 4. Harmonic Analysis and Applications (ed.), Springer, (to appear).
- 5. (with L. Tóth), *Topics on Dedekind Sums, Hardy Sums, and Ramanujan Sums*, Springer, (under preparation).
- 6. (with N. Anantharaman and A. Nikeghbali), *Frontiers in Analysis and Probability*, Springer, 2020.
- 7. (with A. Raigorodskii)(eds.) *Discrete Mathematics and Applications*, Springer, 2020.
- 8. (with D. Breaz)(eds.), Advancements in Complex Analysis From Theory to Practice, Springer, 2020.

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- 9. (with Andrei Raigorodskii)(eds.), *Trigonometric Sums and their Applications*, Springer, 2020.
- 10. (with B. Yang), On Hilbert-Type and Hardy-Type Integral Inequalities and Applications, Springer, 2019
- 11. (with V. Gupta), *Moments of Linear Positive Operators and Approximation*, Springer, 2019.
- 12. (with J. Pintz)(eds.), *Irregularities in the Distribution of Prime Numbers*, Springer, 2018.
- 13. *Goldbach's Problem: Selected Topics*, (Foreword by Jörg Brüdern and Preda V. Mihăilescu), Springer, 2017.
- (with H. L. Montgomery and A. Nikeghbali)(eds.), *Exploring the Riemann Zeta Function: 190 years from Riemann's birth*, (Preface by Freeman J. Dyson), Springer, 2017.
- 15. (with C. Pomerance)(eds.), Analytic Number Theory, Springer, 2015.
- 16. (with N. J. Daras)(eds.), *Computation, Cryptography, and Network Security*, Springer, 2015.
- 17. (with G. V. Milovanović)(eds.), *Analytic Number Theory, Approximation Theory and Special Functions*, Springer, 2014.
- Problem-Solving and Selected Topics in Number Theory: In the Spirit of the Mathematical Olympiads, Springer, 2011. (Foreword by Preda V. Mihăilescu). Published also by HIT press, China.

Teaching

- Functional Analysis, University of Zürich
- Analytic Number Theory, University of Zürich
- Topics in Analytic Inequalities, University of Zürich
- Elements of Analytic Number Theory, University of Zürich
- Algebra I, ETH-Zürich
- Prime Numbers I (Analytic Number Theory), ETH-Zürich
- Introduction to Number Theory, ETH-Zürich

Conferences & Talks

- Invited lecture at the Moscow Institute of Physics and Technology, November 29, 2017.
- Invited lecture at the National Technical University of Athens, June 9, 2017.
- Conference on Approximation and Optimization: Algorithms, Complexity, and Applications, National and Kapodistrian University of Athens, Plenary lecture, June 29-30, 2017.
- Analysis in the Large Calculus of Variations, Dynamics, Geometry. In honor of Helmut Hofer, ETH-Zurich, June 6-10, 2016.
- 3rd International Conference on Cryptography, Cyber-Security and Information, May 26-27, 2016, ΣΣΕ, Athens, Greece (Opening Plenary lecture of the Conference).

- Frontiers in Analysis and Probability, March 3-4, 2016, University of Strasbourg, France.
- Frontiers in Analysis and Probability, October 29-30, 2015, University of Zurich, Switzerland.
- Celebration of the Life and Work of John F. Nash, Jr., Princeton University, October 24, 2015.
- Elementary, Analytic, and Algorithmic Number Theory: In Honor of Carl Pomerance's 70th Birthday, University of Georgia, Athens, June 9-11, 2015 (Invited).
- Analysis, Spectra, and Number Theory, Princeton University, Department of Mathematics, December 15-19, 2014.
- Workgroup Diophantine Analysis Seminar, Princeton University, Department of Mathematics, October 15, 2014 (Invited talk).
- Analytic Number Theory Workshop, July 9-23, 2014, Institut des Hautes Études Scientifiques (IHÉS), Bures-sur-Yvette, France.
- EPFL/ETHZ Number Theory Days 2014, March 7-8, 2014, ETH-Zürich, Switzerland.
- Number Theory and Galois Representations, December 21-22, 2013, SASTRA University, Srinivasa Ramanujan Centre, India (Invited talk).
- Analytic Number Theory, October 20-26, 2013, Mathematische Forschungsinstitut Oberwolfach, Germany.
- Number Theory Seminar, June 25, 2013, Department of Mathematics, University of Ulm, Germany (Invited talk).
- Second International Conference on Applications of Mathematics and Informatics, April 11-12, 2013, $\Sigma\Sigma E$, Athens, Greece (Invited talk).
- Arithmetic & Geometry: 25 Years Number Theory Seminar, June 3-7, 2013, ETH-Zürich, Switzerland.
- Equidistribution in Number Theory and Dynamics, March 18-22, 2013, ETH-Zürich, Switzerland.
- EPFL/ETHZ Number Theory Days 2013, March 15-16, 2013, EPFL Lausanne, Switzerland.
- EPFL/ETHZ Number Theory Days 2012, March 30-31, 2012, ETH-Zürich, Switzerland.
- Ramanujan 125 Conference, November 5-7, 2012, University of Florida, USA (Invited talk).
- The International Jubileaum Conference for the 60th birthday of Samuel J. Patterson: A Conference on Analytic Number Theory, July 26-August 2, 2009, Göttingen, Germany.
- International Congress of Mathematicians, August 22-30, 2006, Madrid, Spain.

Grants & Scholarships

- Latsis Foundation Senior Fellowship research grant (co-financed with the University of Zürich) for the year 2018.
- Forschungskredit research grant from the University of Zurich, 2016-2017.
- Scholarship from the Hellenic National Scholarships Foundation (IKY), 2012-2014.
- Scholarship from the Leventis Foundation, 2011-2012.

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- Scholarship from the A. S. Onassis Foundation, 2010-2011.
- NTUA Grant for Academic Merit, 2008.
- NTUA Rector's Council Grant of Excellence, 2006 and 2009.

Awards / Prizes

- Certificate of Special Recognition for contributions to Mathematics and its Applications, ΣΣΕ, Athens, 2016.
- Notara Prize, Academy of Athens, 2014.
- National Technical University of Athens Rector's Council Grant of Excellence, 2009
- First Prize: József Wildt International Mathematical Competition, Brasov, Romania, 2008.
- National Technical University of Athens Grant for Academic Merit, 2008.
- C. Papakyriakopoulos Prize, National Technical University of Athens, 2007.
- National Technical University of Athens Rector's Council Grant of Excellence, 2006-2007.
- First Prize: József Wildt International Mathematical Competition, Brasov, Romania, 2005.
- Silver Medal: 44th International Mathematical Olympiad (IMO), Tokyo, Japan, 2003.
- First Prize (Gold Medal): 20th Pan-Hellenic Mathematical Olympiad "ARCHIMEDES", 2003
- First Prize (Gold Medal): 63rd Pan-Hellenic Mathematical Competition "EUCLID", 2003
- Silver Medal: 6th Junior Balkan Mathematical Olympiad, Targu Mures, Romania, 2002.
- First Prize (Gold Medal): 19th Pan-Hellenic Mathematical Olympiad "ARCHIMEDES", 2002.

Member of Editorial Boards

- Newsletter of the European Mathematical Society
- Journal of Mathematical Analysis
- The Australian Journal of Mathematical Analysis and Applications
- International Journal of Nonlinear Analysis and Applications
- Journal of Advances in Applied Mathematics
- Universal Journal of Mathematics and Applications
- Journal of Nonlinear Sciences and Applications
- Journal of Mathematics and Computer Science
- Advances in the Theory of Nonlinear Analysis and its Application

Reviewer

• Mathematical Reviews

• Zentralblatt MATH

Referee

- Acta Arithmetica
- Advances in Applied Clifford Algebras
- Advances in Difference Equations
- Applicable Analysis and Discrete Mathematics
- Applied Mathematics and Computation
- Applied Mathematics & Information Sciences Letters
- Arnold Mathematical Journal
- Bulletin of the Australian Mathematical Society
- Bulletin of the Brazilian Mathematical Society
- Bulletin of the London Mathematical Society
- Communications of the Korean Mathematical Society
- Complex Analysis and Operator Theory
- Computational and Applied Mathematics
- Demonstratio Mathematica
- Entropy
- Fractal and Fractional
- Heliyon
- Integral Transforms and Special Functions
- International Journal of Analysis
- International Journal of Number Theory
- Jordan Journal of Mathematics & Statistics
- Journal of Applied Analysis
- Journal of Fixed Point Theory and Applications
- Journal of Inequalities and Applications
- Journal of Number Theory
- Indian Journal of Mathematics
- Kodai Mathematical Journal
- Linear and Multilinear Algebra
- Matematicki Vesnik
- Mathematical Communications
- Mathematical Modelling and Analysis
- Mathematics Open Access Journal
- Mathematische Nachrichten
- National Academy Science Letters
- Proceedings of the Steklov Institute of Mathematics
- Publications de l'Institut Mathématique (Beograd)
- Publicationes Mathematicae Debrecen
- Quarterly Journal of Mathematics
- Results in Mathematics
- Scientia, Series A: Mathematical Sciences
- Scientific Research and Essays
- SpringerPlus Journal

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- Symmetry
- The Ramanujan Journal
- Tokyo Journal of Mathematics
- Turkish Journal of Mathematics