

# 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 research interests lie in mathematical analysis, analytic number theory and more specifically in exponential / trigonometric sums, zeta functions, approximation theory, functional equations and analytic inequalities. I am also interested in the distribution of prime numbers and the analytic investigation of elliptic curves.

**My h-index: 13**

## Academic Employment

- Since January 1, 2018, I am a Latsis Foundation Senior Fellow at the University of Zürich (co-financed by the University of Zürich and the Latsis Foundation) with research and teaching duties.
- *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 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) *Explicit estimates of sums related to the Nyman-Beurling criterion for the Riemann Hypothesis*, Journal of Functional Analysis (to appear).
2. (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 (to appear).
3. (with M. R. Abdollahpour) *Hyers-Ulam stability of hypergeometric differential equations*, Aequationes Mathematicae (to appear).
4. (with H. Maier) *The error for the second moment of cotangent sums related to the Riemann Hypothesis*, arXiv:1806.00772
5. (with B. Yang) *On a Hilbert-type integral inequality related to the extended Hurwitz zeta function in the whole plane*, Acta Applicandae Mathematicae, DOI 10.1007/s10440-018-0195-9
6. (with H. Maier) *On the size of an expression in the Nyman-Beurling-Baez-Duarte criterion for the Riemann Hypothesis*, Canadian Mathematical Bulletin (to appear).
7. (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*,  
<https://doi.org/10.2298/AADM180130011R>
8. (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.
  9. (with H. Maier) *Estimates of sums related to the Nyman-Beurling criterion for the Riemann Hypothesis*, *Journal of Number Theory* (to appear).
  10. (with H. Maier) *Asymptotics for moments of certain cotangent sums for arbitrary exponents*, *Houston Journal of Mathematics*, 43(4)(2017), 1235–1249.
  11. (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.
  12. (with B. Yang) *A half-discrete Hilbert-type inequality in the whole plane related to the Riemann zeta function*, *Applicable Analysis*, DOI: 10.1080/00036811.2017.1313411.
  13. *From a cotangent sum to a generalized totient function*, *Applicable Analysis and Discrete Mathematics*, 11(2017), 369–385.
  14. (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.
  15. (with H. Maier) *Asymptotics for moments of certain cotangent sums*, *Houston Journal of Mathematics*, 43(1)(2017), 207-222.
  16. (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.
  17. (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.
  18. (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.
  19. (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.
  20. (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.
  21. (with H. Maier) *The rate of growth of moments of certain cotangent sums*, *Aequationes Mathematicae*, 2015, 90(3)(2016), 581- 595.
  22. (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.
  23. (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.
  24. (with H. Maier) *The order of magnitude for moments for certain cotangent sums*, *Journal of Mathematical Analysis and Applications*, 429(1)(2015), 576-590.

25. (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.
26. (with S. -M. Jung and C. Mortici) *On a functional equation of trigonometric type*, Applied Mathematics and Computation, 252(2015), 294-303.
27. (with C. Mortici) *On the growth rate of divergent series*, Journal of Number Theory, 147(2015), 499–507.
28. *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.
29. (with B. Yang) *On a multidimensional Hilbert-type integral inequality associated to the Gamma function*, Applied Mathematics and Computation, 249(2014), 408-418.
30. (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.
31. (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.
32. (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.
33. *A cotangent sum related to zeros of the Estermann zeta function*, Applied Mathematics and Computation, 240(2014), 161–167.
34. (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.
35. (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.
36. (with B. Yang) *A multidimensional half-discrete Hilbert-type inequality and the Riemann zeta function*, Applied Mathematics and Computation, 225(2013), 263–277.
37. (with B. Yang) *On half-discrete Hilbert's inequality*, Applied Mathematics and Computation, 220(2013), 75–93.
38. (with G. V. Milovanović) *Some properties of a hypergeometric function which appear in an approximation problem*, Journal of Global Optimization, 57(2013), 1173–1192.
39. (with P. Mihăilescu) *Public key cryptography, number theory and applications*, Newsletter, European Mathematical Society, 86(2012), 25–30.

### ***In collected volumes***

1. (with B. Yang) *On a Hilbert-type integral inequality in the whole plane*, In: Applications of Nonlinear Analysis, Springer (to appear)
2. (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.
3. (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.
  4. (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.
  5. (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.
  6. (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.
  7. (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.
  8. (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. *Goldbach's Problem: Selected Topics*, (Foreword by Jörg Brüdern and Preda V. Mihăilescu), Springer, 2017.
3. (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.
4. *Harmonic Analysis and Applications* (ed.), Springer (under preparation).
5. *Advancements in Complex Analysis - From Theory to Practice* (ed.), Springer (under preparation).
6. (with L. Tóth) *Topics on Dedekind Sums, Hardy Sums, and Ramanujan Sums*, SpringerBriefs, Springer, (under preparation).
7. (with C. Pomerance)(eds.), *Analytic Number Theory*, Springer, 2015.
8. (with N. J. Daras)(eds.), *Computation, Cryptography, and Network Security*, Springer, 2015.
9. (with G. V. Milovanović)(eds.), *Analytic Number Theory, Approximation Theory and Special Functions*, Springer, 2014.
10. *Problem-Solving and Selected Topics in Number Theory: In the Spirit of the Mathematical Olympiads*, Springer, 2011. (Foreword by Preda V. Mihăilescu)

## 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.
- 3<sup>rd</sup> 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, Mathematisches 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, ΣΣΕ, 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 Jubileum 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.
- 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

### **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
- Bulletin of the Australian Mathematical Society
- Communications of the Korean Mathematical Society
- Complex Analysis and Operator Theory
- Computational and Applied Mathematics
- Fractal and Fractional
- 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
- SpringerPlus Journal
- Symmetry
- Tokyo Journal of Mathematics
- Turkish Journal of Mathematics