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# Michael (Mihalis) Papadimitrakis

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## Curriculum Vitae

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### Personal

Place and date of birth: Athens, 13/5/1959.

Family: Married to Maria Spyropoulou. With two children, Dimitris and Myrto - Aspasia.

### Studies

9/1977 - 6/1981: Undergraduate, Math. Department, University of Athens.

9/1981 - 3/1987: Graduate, Math. Department, UCLA.

Thesis advisor: J. B. Garnett.

Thesis title: *On best approximation of continuous functions by bounded holomorphic functions.*

### Professional career

Spring 1987: Lecturer, Math. Department, UCLA.

9/1987 - 8/1990: Van Vleck Assistant Professor, Math. Department, University of Wisconsin-Madison.

9/1990 - 6/1992: Visiting Assistant Professor, Math. Department, Washington University.

9/1992 - 4/1993: Visiting Assistant Professor, Math. Department, University of Crete.

5/1993 - 10/1997: Assistant Professor, Math. Department, University of Crete.

11/1997 - 2/2015: Associate Professor, Math. Department, University of Crete.

3/2015 - present: Professor, Math. Department, University of Crete.

### Research interests

Functions of one complex variable, classical and modern harmonic analysis (Fourier series, Fourier integrals and the Calderon-Zygmund theory), operators on classical (holomorphic) function spaces, classical potential theory, convex bodies.

### Teaching experience

Lecturing

1. *Undergraduate*: trigonometry, linear algebra, advanced linear algebra, calculus, advanced calculus, ordinary differential equations, partial differential equations, stability of ordinary differential equations, complex analysis, group theory, number theory, statistics, optimization theory, functional analysis, Fourier series, theory of sets, real analysis, Galois theory, inequalities, Euclidean geometry, foundations, probability.
2. *Graduate*: Fourier series and  $H^p$  spaces (University of Wisconsin-Madison), classical potential theory (Washington University), spaces of holomorphic functions and harmonic measure (Washington University), measure theory, complex analysis, functional analysis, harmonic analysis, spaces of holomorphic functions, theory of distributions and the Fourier transform.

Reading courses

1. *Undergraduate*: Fourier series and functional analysis (University of Wisconsin-Madison).
2. *Graduate*: complex analysis (four times), optimization theory, Fourier transforms (three times), convex bodies, Fourier series, Fourier transforms and distributions, harmonic analysis (four times).

Class notes

1. *Undergraduate*: Optimization Theory, Complex Analysis, Fourier Series, Inequalities, Linear Algebra III, Calculus I, Calculus III, Analysis, Number Theory, Classical Analysis, Real Analysis, Harmonic Analysis, PDE.
2. *Graduate*: Spaces of Holomorphic Functions (Washington University), Classical Potential Theory (Washington University), Complex Analysis, Measure Theory, Functional Analysis, Theory of Distributions and the Fourier Transform.

### Theses supervision

Undergraduate diploma theses:

1. *The prime number theorem*, by M. Alevizaki (1999).
2. *The theorem of Dirichlet about the distribution of prime numbers in arithmetical progressions*, by D. Nika (1999).

3. *The interpolation theorems of M. Riesz and G. Thorin*, by D. Varsos (2006).
4. *The interpolating sequences theorem of L. Carleson*, by D. Mavridi (2006).
5. *The theorem of Mergelyan*, by N. Pattakos (2008).
6. *Some classical theorems of Wiener in harmonic analysis*, by M. Ntekoume (2014).
7. *Finite Pick interpolation*, by A. Gkikopoulou (2018).

Master's theses:

1. *Optimal Young and Brascamp-Lieb inequalities*, by I. Stefanakis (1998).
2. *The best constant in the Hausdorff-Young inequality*, by I. Parissis (2002).
3. *Historical roots of the integral of Stieltjes*, by F. Tsifountidou (2006).
4. *Decay of circular means of Fourier transforms of measures*, by C. Chatzifountas (2009).
5. *Möbius invariant spaces*, by K. Panteris (2011).
6. *Properties of Taylor coefficients of  $H^p$  functions*, by P. Koutsaki (2013).
7. *On the norm of the maximal function operator with respect to convex sets and on the spherical maximal function*, by A. Mpeneas (2015).
8. *The Hardy-Littlewood maximal operator on weighted  $L^p$  spaces and the theory of  $A_p$  weights*, by M. Ntekoume (2015).
9. *The atomic structure of  $H^1$  and the duality between  $H^1$  and BMO*, by G. Psaromilingos (2015).
10. *The duality between  $H^1$  and BMO; the complex variable theory*, by F. Papageorgiou (2016).
11. *Existence of fundamental solutions of differential operators*, by M. Giannaki (2018).
12. *The restriction problem for the Fourier transform*, by V. Fragkiadaki (2019).
13. *Hausdorff dimension and energy of measures*, by M. Gretsas (2021).
14. *The theorem of Fatou for harmonic functions in the complex plane*, by M. Arvanitakis (2022).
15. *The law of the iterated logarithm for Bloch functions*, by Ch. Roditou (2022).

PhD theses:

1. *Oscillatory integrals with polynomial phase*, by I. Parissis (2007).
2. *Closed range integral and composition operators on spaces of analytic functions*, by K. Panteris (2021).
3. *On extremal positions of convex bodies with respect to their quermassintegrals*, by I. Stefanakis (ongoing).
4. *Weighted inequalities and reverse Hölder inequalities*, by A. Mpeneas (ongoing).
5. *Integral operators on spaces of analytic functions*, by F. Papageorgiou (ongoing).

### Committee participation

Undergraduate studies committee, graduate committee, graduate admissions committee (four times), library committee, seven committees for the election/promotion of regular faculty members, six committees for hiring visitors, several examining committees of undergraduate diploma theses, master's theses and PhD theses.

### Conference organizing

1. I was member of the scientific committee of the international conference "Complex and Harmonic Analysis" held on May 25-27, 2006 in Thessaloniki, Greece.
2. I was member of the organizing committee of the international conference "Harmonic Analysis and Related Problems" held on June 19-23, 2006 in Zaros, Greece.
3. I was member of the organizing committee of the international conference "Complex and Harmonic Analysis 2009" held on September 3-5, 2009 in Archanes, Greece.
4. I was member of the organizing committee of the international workshop "Complex Analysis and Operator Theory" held on July 11-16, 2010 in Thessaloniki, Greece.
5. I was member of the organizing committee of the "15th Panhellenic Conference on Mathematical Analysis" held on May 27-29, 2016 in Heraklion, Greece.
6. I was member of the organizing committee of the international conference "New Developments in Complex Analysis and Function Theory" held on July 2-6, 2018 in Heraklion, Greece.

### Talks

Math. Departments:

1. University of Tuscaloosa, Alabama, USA (1990).
2. De Paul University, Illinois, USA (1990).
3. Orsay, Paris, France (1991).
4. Kent State University, Ohio, USA (1992).
5. University of Athens, Athens, Greece (1993).
6. Aristotle University, Thessaloniki, Greece (2003).

7. University of Edinburgh, United Kingdom (2004).
8. Aristotle University, Thessaloniki, Greece (2007).
9. University of Malaga, Malaga, Spain (2008).
10. University of Malaga, Malaga, Spain (2009).
11. University of Athens, Athens, Greece (2010).

#### Conferences:

1. Conference in Honor of W. Rudin, Madison, USA (1991).
2. Conference in the Memory of S. Pichorides, Anogia, Greece (1995).
3. Panhellenic Conference on Mathematical Analysis, Anogia, Greece (1996).
4. Second Göteborg Conference on Harmonic Analysis and PDE, Göteborg, Sweden (2001).
5. Workshop on Fourier Analysis and Convexity, Milan, Italy (2001).
6. International two-day Meeting on Complex, Harmonic and Functional Analysis and Applications, Thessaloniki, Greece (2003).
7. 11th Panhellenic Conference on Mathematical Analysis, Thessaloniki, Greece (2006).
8. International Workshop in Complex Analysis and Operator Theory, Thessaloniki, Greece (2010).
9. International Functional Analysis Meeting, Valencia, Spain (2010).
10. International conference “Complex and Harmonic Analysis 2011”, Malaga, Spain (2011).
11. International conference “Advanced Courses in Operator Theory and Complex Analysis”, Thessaloniki, Greece (2023).

#### Research projects

1. I was the scientific coordinator of the node in Greece of the INTAS project “Function Spaces and Harmonic Analysis” (June 2000 - Dec. 2002) (Reference number: INTAS 99-01080). Total budget (for the node in Greece): 8863.57 euros.
2. I was the scientist-in-charge of the node in Greece of the “Harmonic Analysis and Related Problems 2002-2006 IHP Network” (July 2002 - July 2006) (Contract number: HPRN-CT-2001-00273-HARP). Total budget (for the node in Greece): 131600.00 euros.
3. I was the scientist-in-charge of the Pythagoras II (Support of Research Groups in the Universities) project “Harmonic Analysis: Geometric Problems and Problems of Classical Spaces of Functions” (Jan. 2005 - Dec. 2007). Total budget: 48145.64 euros.
4. I was the scientific advisor of the post-doctoral fellow Jose Ignacio Monreal Galan who was supported by the project “Hyperbolic Metric and Spaces of Analytic Functions” (code PE1, 3378) (April 2012 - March 2014) in the framework of the program “Support of the Post-doctoral Fellows”. Total budget: 87000 euros.

#### Publications

1. *Best uniform approximation by bounded analytic functions*. Proc. Amer. Math. Soc. **103** (1988), 882-886.
2. *The Schrödinger-Hill equation  $-\ddot{y}(x) + q(x)y(x) = \mu y(x)$ ; on odd potentials  $q$* . Illinois J. Math. **33** (1989), 375-383.
3. *Almost isometric maps of the hyperbolic plane* (with J. B. Garnett). J. London Math. Soc. **43** (1991), 269-282.
4. *On convexity of level curves of harmonic functions in the hyperbolic plane*. Proc. Amer. Math. Soc. **114** (1992), 695-698.
5. *On the Busemann-Petty problem about convex, centrally symmetric bodies in  $\mathbb{R}^n$* . Mathematika **39** (1992), 258-266.
6. *Continuity of the operator of best uniform approximation by bounded analytic functions*. Bull. London Math. Soc. **25** (1993), 44-48.
7. *On best uniform approximation by bounded analytic functions*. Bull. London Math. Soc. **28** (1996), 15-18.
8. *Extensions of a theorem of Marcinkiewicz-Zygmund and of Rogosinski's formula and an application to universal Taylor series* (with E. S. Katsoprinakis). Proc. Amer. Math. Soc. **127** (1999), 2083-2090.
9. *Isotropic surface area measures* (with A. Giannopoulos). Mathematika **46** (1999), 1-13.
10. *The Steinhaus tiling problem and the range of certain quadratic forms* (with M. Kolountzakis). Illinois J. Math. **46** (2002), 947-951. Also available at arXiv:math/0009207.
11. *A class of non-convex polytopes that admit no orthonormal basis of exponentials* (with M. Kolountzakis). Illinois J. Math. **46** (2002), 1227-1232. Also available at arXiv:math/0101217.
12. *Hausdorff and quasi-Hausdorff matrices on spaces of analytic functions* (with P. Galanopoulos). Canad. J. Math. **58** (2006), 548-579.

13. *Hankel and Toeplitz transforms on  $H^1$ : continuity, compactness and Fredholm properties* (with J. Virtanen). *Integral Equations Operator Theory* **61** (2008), 573-591.
14. *Singular oscillatory integrals on  $\mathbb{R}^n$*  (with I. Parissis). *Math. Zeit.* **266** (2010), 169-179. Also available at arXiv:0707.2757.
15. *The essential norm of a composition operator on the minimal Möbius invariant space* (with Th. Mitsis). *Ann. Acad. Sci. Fenn. Math.* **37** (2012), 203-214. Also available at arXiv:1005.4935.
16. *Semigroups of composition operators and integral operators in spaces of analytic functions* (with O. Blasco, M. Contreras, S. Diaz-Madrigal, J. Martinez, A. Siskakis). *Ann. Acad. Sci. Fenn. Math.* **38** (2013), 67-90.
17. *Condenser capacity under multivalent holomorphic functions* (with S. Pouliasis). *Comp. Methods and Function Theory* **13** (2013), 11-20.
18. *(Weak) compactness of Hankel operators on BMOA*. *Publicacions Matemàtiques* **58** (2014), 221-231. Also available at arXiv:1108.2817.
19. *Measurable Steinhaus sets do not exist for finite sets or the integers in the plane* (with M. Kolountzakis). *Bull. London Math. Soc.* **49** (2017), 798-805. Also available at arXiv:1604.06454.
20. *One sided extendability and  $p$ -continuous analytic capacities* (with E. Bolkas, V. Nestoridis, C. Panagiotis). *J. Geom. Analysis* **29** (2019), 1369-1406. Also available at arXiv:1606.05443.
21. *On universality and convergence of the Fourier series of functions in the disc algebra* (with Ch. Papachristodoulos). *J. d'Analyse Mathématique* **137** (2019), 57-71. Also available at arXiv:1503.03426.
22. *Continuity of weighted estimates for sublinear operators* (with N. Pattakos). *Bull. Hellenic Math. Soc.* **63** (2019), 50-53. Also available at arXiv:1206.4580.
23. *Sampling and interpolation for analytic self-mappings of the disc* (with J. I. Monreal Galan). Available at arXiv:2308.00453.
24. *A variant of Hilbert's inequality and the norm of the Hilbert matrix on  $K^p$*  (with V. Daskalogiannis, P. Galanopoulos). Available at arXiv:2307.09859.