

VITA

Philippe MICHEL

Born 23 jan. 23 1969, LYON 4ème
Maried, 3 children

CONTACT

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EDUCATION

1998: Habilitation à diriger les recherches de l'Université Paris-Sud.
1995: Doctorat de Mathématiques pures Paris-Sud sous la direction de E. Fouvry.
1993-1994: Assistant Moniteur Normalien à l' Université Paris-Sud.
1989-1993: École Normale Supérieure de Cachan.
1987-1989: Classe Préparatoires (Sup. & M') au Lycée Public du Parc, Lyon.

MILITARY SERVICE

1994-1995: 99ème Régiment d' Infanterie de Sathonay-Camp.

POSITIONS

2008- : Professeur Ordinaire, École Polytechnique Fédérale de Lausanne.
2003-2008: Professeur de 1ère classe, Université Montpellier II.
1998-2003: Professeur de 2ème classe, Université Montpellier II.
1999-2000: member, Institute for Advanced Studies, Princeton.
1995-1998: Maître de Conférences de 2ème classe, Université Paris-Sud.

DISTINCTIONS

2012: Fellow of the AMS.
2011: Elected Member of the Academia Europaea (Academy of Europe).
2009-2014: Advanced Research Grant, "EQUIARITH", European Research Council.
2006: Invited speaker (number theory section), ICM Madrid.
2001-2003: ACI Young Researcher.
1999-2004: Member of Institut Universitaire de France.
1999: Prix PECCOT-VIMONT, Collège de France.

LECTURES

- Dec. 2014: Peter Sarnak 61th birthday conference, Princeton.
- June 2014: Séminaire d'Arithmétique et de Géométrie Algébrique d'Orsay.
- Dec. 2013: 17th Midrasha Mathematica "L-functions, spectra and equidistribution", IAS Jerusalem.
- Nov. 2013: Séminaire de théorie des nombres de l'Institut Mathématique de Jussieu.
- Oct. 2013, Colloquium Univ. Zuerich.
- July 2013, Special lecture series, Caltech.
- June 2013, 25th years of Number Theory (G. Wuestholz 65th birthday conference), ETHZ.
- Feb 2013, Number Theory Seminar, Stanford.
- Dec. 2012, Colloquium, Université de Genève.
- Sept. 2012: D.-R. Heath-Brown 60th Birthday conference, Oxford.
- May-June 2012: Lecture series, CEU, Budapest.
- May 2012: Seminar, Renyi Institute, Budapest.
- March 2012: Number Theory seminar, HUJ, Jerusalem.
- Feb. 2012: Colloquium, Univ. Clermont-Ferrand.
- Feb. 2012: Heilbronn seminar, Bristol.
- Jan 2012: International colloquium, TIFR, Mumbai.
- Nov. 2011: Workshop ESI, Vienna.
- Sept 2011: Dynamics on Homogeneous Spaces and Number Theory Conference, OSU, Columbus.
- Aug 2011: Workshop MFO, Oberwolfach.
- Jan. 2010: Colloquium, Univ. Tuebingen.
- Oct. 2009: Lecture, Journées de la Société Mathématique Suisse, Porrentruy.
- Oct. 2009: Colloquium, Univ. Fribourg.
- Sept-Dec 2009: Nachdiplomvorlesung, 14 weeks lecture series, ETH Zuerich.
- Apr. 2009, Colloquium, Université de Genève.
- Feb. 2009, Southern California Number Theory Day, Caltech, Pasadena.
- May 2008: "Analytic number theory in higher rank", Courant Institute, New York.
- Feb. 2008: Colloquium, Univ. Neuchatel.
- May 2007: "L-functions and Automorphic forms" for D. Goldfeld's 60th birthday, Columbia University.
- Sept. 2006: International Arithmetic Algebraic Geometry conference, Madrid.
- Août 2006: ICM Madrid.
- Apr. 2006: Hahn Lectures, Yale University.
- Apr. 2006: Number Theory Days, ETH. Zürich.
- Jan. 2006: Colloquium, Stanford University.
- Nov. 2005: Colloquium, EPF Lausanne.
- June 2005: Gauss/Dirichlet conference (for the 150-th anniversary of C. F. Gauss's death and the 200-th anniversary of P. L. Dirichlet's birth), Goettingen.
- Feb. 2004: Colloquium "Deutsch-Französischer Diskurs", Université de Saarbruecken.
- Dec. 2003: "Arithmetic Geometry and Number Theory", N. M. Katz's 60th birthday, Princeton University.
- May 2002: "Zeta-Functions and Associated Riemann Hypotheses", Courant Institute NYU, New York.
- Jul. 2001: Plenary lecture. Journées Arithmétiques 2001, Lille.
- June 2001: Journées de la Société Mathématique Suisse, Neuchâtel.

March 2001: Séminaire BOURBAKI.
Jan. 2001: Colloquium, Université Lyon 1.
Apr. 2000: “Recent Trends in Analytic Number Theory”, Institute for Advanced Studies, Princeton.
March 1999: Cours Peccot, Collège de France.
March 1998: Séminaire BOURBAKI.
Jul. 1997: International conférence in number theory, A. Schinzel’s 60-th birthday, Zakopane.

Organization of Conferences

July 2014: Summer in Analytic Number Theory IHES, Bures/Yvette.
May 2014: Monte Verita conference on cryptology, Centro S. Franscini.
Jun 2013: E. Fouvry 60th birthday conference, CIRM.
March 2013: Equidistribution in Number Theory and Dynamics, ETHZ.
Jun 2011: Eva Bayer 60th birthday conference, EPFL.
Jan-Jun 2011: GANT Semester Program, EPFL.
Since 2008: Number Theory Days (yearly workshop whose organization alternates between EPF Lausanne and ETH Zuerich)

Committees and Panels

2014: SNF starting grants panel.
2014: ERC starting grants Mathematics panel.
2014: Selection committee for the Senior Members of the Institut Universitaire de France (IUF).
2014: Mathematics section committee, Academia Europaea.
2013: Selection committee for the Junior Members of the Institut Universitaire de France (IUF).
2013: Hiring committee, Université de Grenoble.
2012: Hiring committee, ETHZ.
2012: ERC starting grants Mathematics panel
Since 2010: Chair of the hiring committee of the Section de Mathématiques, EPFL.
2010: AERES Evaluation committee for the Math. Dept. of Université de Caen.
2008: AERES Evaluation committee for the Math. Depts of Universités of Metz and Nancy.

PhD Students

2012- : A. Peyrot.
2012- : D. Wuersch.
2009-2012 : H. Wu.
2005- 2008 :N. Templier.
2004-2008 : B. Louvel (jointly with S. J. Patterson).
2004-2007 : D. Trotabas.
2001-2004 : G. Ricotta.
1998-2001 : E. Royer (jointly with E. Fouvry)

Editorial Boards

2013-: Mathematische Zeitschrift.
2011-: Journal of Algebra and Number Theory.
2007- : Journal of Number Theory.
2006- : Journal de Théorie des Nombres de Bordeaux.
2004- : Archiv des Mathematik.
2004-2007 : International Journal of Number Theory.

Papers

In preparation

- [1] Ph. Michel, P. Nelson, and A. Venkatesh, *Simultaneous subconvex bounds for Rankin-Selberg L -functions*.

Preprints

- [2] D. H. J. Polymath, *New equidistribution estimates of Zhang type and bounded gaps between primes*, Preprint [arxiv.org:1402.0811](https://arxiv.org/abs/1402.0811) (2014).
- [3] É. Fouvry, E. Kowalski, and Ph. Michel, *The sliding-sum method for short exponential sums*, Preprint [arxiv.org:1307.0135](https://arxiv.org/abs/1307.0135) (2013).
- [4] É. Fouvry, E. Kowalski, and Ph. Michel, *Algebraic twists of modular forms and Hecke orbits*, Preprint [arxiv.org:1207.0617](https://arxiv.org/abs/1207.0617) (2012).

Published papers

- [5] É. Fouvry, E. Kowalski, and Ph. Michel, *On the exponent of distribution of the ternary divisor function*, *Mathematika* (to appear) (2013). Available at [http://arxiv.org/abs/1304.3199](https://arxiv.org/abs/1304.3199).
- [6] É. Fouvry, E. Kowalski, and Ph. Michel, *Algebraic trace functions over the primes*, *Duke Math. Journal* (to appear) (2013). Preprint [arXiv:1211.6043](https://arxiv.org/abs/1211.6043).
- [7] É. Fouvry, E. Kowalski, and Ph. Michel, *Counting sheaves using spherical codes*, *Math. Research Letters* (to appear) (2013). Preprint [arXiv:1210.0851](https://arxiv.org/abs/1210.0851).
- [8] É. Fouvry, E. Kowalski, S. Ganguly, and Ph. Michel, *Gaussian distribution for the divisor function and Hecke eigenvalues in arithmetic progressions*, *Com. Math. Helvetici* (to appear). Preprint [arxiv.org:1301.0214v1](https://arxiv.org/abs/1301.0214v1).
- [9] É. Fouvry, E. Kowalski, and Ph. Michel, *An inverse theorem for Gowers norms of trace functions over prime fields*, *Proc. Cambridge Phil. Math. Soc.* **155** (2013), no. 02, 277-295. Preprint [arxiv.org:1211.3282](https://arxiv.org/abs/1211.3282).
- [10] V. Blomer and Ph. Michel, *Hybrid bounds for automorphic forms on ellipsoids over number fields*, *Journ. Inst. Math. Jussieu* **12** (2013), no. 04, 727-758. [arxiv.org:1110.4526](https://arxiv.org/abs/1110.4526).
- [11] J. Ellenberg, Ph. Michel, and A. Venkatesh, *Equidistribution of integral points on spheres*, *Proceedings of the 2012 International Math. Colloquium (TIFR)* (2013). [arXiv.org:1001.0897](https://arxiv.org/abs/1001.0897) (to appear).
- [12] M. Einsiedler, E. Lindenstrauss, Ph. Michel, and A. Venkatesh, *Distribution of periodic torus orbits on homogeneous spaces II: Duke's theorem for quadratic fields.*, *Enseign. Math. (2)* **58** (2012), no. 3-4, 249-313. [arxiv.org:1109.0413](https://arxiv.org/abs/1109.0413).
- [13] V. Blomer and Ph. Michel, *Sup-norms of eigenfunctions on arithmetic ellipsoids*, *Int. Math. Res. Not. IMRN* **21** (2011), 4934-4966.
- [14] M. Einsiedler, E. Lindenstrauss, Ph. Michel, and A. Venkatesh, *Distribution of periodic torus orbits on homogeneous spaces III: Duke's theorem for cubic fields.*, *Ann. of Math.* **173** (2011), no. 2, 815-885. [arXiv:0708.1113](https://arxiv.org/abs/0708.1113).
- [15] Ph. Michel and A. Venkatesh, *The subconvexity problem for GL_2* , *Publ. Math. IHES* **111** (2010), no. 1, 171-280. [arXiv:0903.3591](https://arxiv.org/abs/0903.3591).
- [16] P. Michel and D. Ramakrishnan, *Consequences of the Gross-Zagier formulae: stability of average L -values, subconvexity, and non-vanishing mod p* , *Number theory, analysis and geometry*, Springer, New York, 2012, pp. 437-459. [arXiv:0709.4668](https://arxiv.org/abs/0709.4668).
- [17] M. Einsiedler, E. Lindenstrauss, Ph. Michel, and A. Venkatesh, *Distribution of periodic torus orbits on homogeneous spaces I.*, *Duke Math. Journal* **148** (2009), no. 1, 119-174. [arXiv:math/0607815](https://arxiv.org/abs/math/0607815).
- [18] J. Bourgain, E. Lindenstrauss, Ph. Michel, and A. Venkatesh, *Some effective results for $\times a \times b$* , *Ergodic Theory and Dynamical Systems* **29** (2009), no. 6, 1705-1722.
- [19] V. Blomer, G. Harcos, and P. Michel, *Bounds for modular L -functions in the level aspect*, *Ann. Sci. École Norm. Sup. (4)* **40** (2007), no. 5, 697-740.
- [20] E. Fouvry and Ph. Michel, *Sur le changement de signe des sommes de Kloosterman*, *Ann. of Math. (2)* **165** (2007), no. 3, 675-715.
- [21] P. Michel and A. Venkatesh, *Heegner points and non-vanishing of Rankin/Selberg L -functions*, *Analytic number theory*, *Clay Math. Proc.*, vol. 7, Amer. Math. Soc., Providence, RI, 2007, pp. 169-183.
- [22] V. Blomer, G. Harcos, and Ph. Michel, *A Burgess-like subconvex bound for twisted L -functions*, *Forum Math.* **19** (2007), no. 1, 61-105. Appendix 2 by Z. Mao.

- [23] Ph. Michel, *Analytic number theory and families of automorphic L-functions*, Automorphic forms and applications (Park City, UT, 2002), IAS/Park City Math. Ser., vol. 12, Amer. Math. Soc., Providence, RI, 2007, pp. 179–296.
- [24] Ph. Michel and A. Venkatesh, *Equidistribution, L-functions and ergodic theory: on some problems of Yu. Linnik*, International Congress of Mathematicians. Vol. II, Eur. Math. Soc., Zürich, 2006, pp. 421–457.
- [25] Ph. Michel, *Some recent applications of Kloostermania*, Physics and number theory, IRMA Lect. Math. Theor. Phys., vol. 10, Eur. Math. Soc., Zürich, 2006, pp. 225–251.
- [26] G. Harcos and Ph. Michel, *The subconvexity problem for Rankin-Selberg L-functions and equidistribution of Heegner points. II*, Invent. Math. **163** (2006), no. 3, 581–655.
- [27] Ph. Michel, *Some specimens of L-functions*, Recent perspectives in random matrix theory and number theory, London Math. Soc. Lecture Note Ser., vol. 322, Cambridge Univ. Press, Cambridge, 2005, pp. 357–424.
- [28] Ph. Michel, *The subconvexity problem for Rankin-Selberg L-functions and equidistribution of Heegner points*, Ann. of Math. (2) **160** (2004), no. 1, 185–236.
- [29] E. Fouvry, Ph. Michel, J. Rivat, and A. Sárközy, *On the pseudorandomness of the signs of Kloosterman sums*, J. Aust. Math. Soc. **77** (2004), no. 3, 425–436.
- [30] J. Cogdell and Ph. Michel, *On the complex moments of symmetric power L-functions at $s = 1$* , Int. Math. Res. Not. **31** (2004), 1561–1617.
- [31] E. Fouvry and Ph. Michel, *Crible asymptotique et sommes de Kloosterman*, Proceedings of the Session in Analytic Number Theory and Diophantine Equations, Bonner Math. Schriften, vol. 360, Univ. Bonn, Bonn, 2003, pp. 27.
- [32] Ph. Michel, *Familles de fonctions L de formes automorphes et applications*, J. Théor. Nombres Bordeaux **15** (2003), no. 1, 275–307. Les XXIIèmes Journées Arithmétiques (Lille, 2001).
- [33] E. Fouvry and Ph. Michel, *Sommes de modules de sommes d'exponentielles*, Pacific J. Math. **209** (2003), no. 2, 261–288.
- [34] Ph. Michel, *Répartition des zéros des fonctions L et matrices aléatoires*, Astérisque **282** (2002), Exp. No. 887, viii, 211–248. Séminaire Bourbaki, Vol. 2000/2001.
- [35] E. Kowalski and Ph. Michel, *Zeros of families of automorphic L-functions close to 1*, Pacific J. Math. **207** (2002), no. 2, 411–431.
- [36] Ph. Michel and J. Vanderkam, *Simultaneous nonvanishing of twists of automorphic L-functions*, Compositio Math. **134** (2002), no. 2, 135–191.
- [37] Ph. Michel and A. Venkatesh, *On the dimension of the space of cusp forms associated to 2-dimensional complex Galois representations*, Int. Math. Res. Not. **38** (2002), 2021–2027.
- [38] E. Kowalski, Ph. Michel, and J. VanderKam, *Rankin-Selberg L-functions in the level aspect*, Duke Math. J. **114** (2002), no. 1, 123–191.
- [39] É. Fouvry and Ph. Michel, *À la recherche de petites sommes d'exponentielles*, Ann. Inst. Fourier (Grenoble) **52** (2002), no. 1, 47–80.
- [40] L. Merel, *Sur la nature non-cyclotomique des points d'ordre fini des courbes elliptiques*, Duke Math. J. **110** (2001), no. 1, 81–119. With an appendix by E. Kowalski and Ph. Michel.
- [41] H. Iwaniec and Ph. Michel, *The second moment of the symmetric square L-functions*, Ann. Acad. Sci. Fenn. Math. **26** (2001), no. 2, 465–482.
- [42] E. Kowalski and Ph. Michel, *Deux théorèmes de non-annulation de valeurs spéciales de fonctions L*, Manuscripta Math. **104** (2001), no. 1, 1–19.
- [43] E. Kowalski, Ph. Michel, and J. VanderKam, *Mollification of the fourth moment of automorphic L-functions and arithmetic applications*, Invent. Math. **142** (2000), no. 1, 95–151.
- [44] E. Kowalski and Ph. Michel, *Explicit upper bound for the (analytic) rank of $J_0(q)$* , Israel J. Math. **120** (2000), 179–204.
- [45] E. Kowalski, Ph. Michel, and J. VanderKam, *Non-vanishing of high derivatives of automorphic L-functions at the center of the critical strip*, J. Reine Angew. Math. **526** (2000), 1–34.
- [46] E. Kowalski and Ph. Michel, *A lower bound for the rank of $J_0(q)$* , Acta Arith. **94** (2000), no. 4, 303–343.
- [47] Ph. Michel and J. Schneider, *Approximation simultanée de réels par des nombres rationnels et noyau de collision de l'équation de Boltzmann*, C. R. Acad. Sci. Paris Sér. I Math. **330** (2000), no. 9, 857–862.
- [48] D. R. Heath-Brown and Ph. Michel, *Exponential decay in the frequency of analytic ranks of automorphic L-functions*, Duke Math. J. **102** (2000), no. 3, 475–484.
- [49] Ph. Michel and J. VanderKam, *Non-vanishing of high derivatives of Dirichlet L-functions at the central point*, J. Number Theory **81** (2000), no. 1, 130–148.
- [50] E. Kowalski and Ph. Michel, *The analytic rank of $J_0(q)$ and zeros of automorphic L-functions*, Duke Math. J. **100** (1999), no. 3, 503–542.
- [51] Ph. Michel, *Sur les zéros de fonctions L sur les corps de fonctions*, Math. Ann. **313** (1999), no. 2, 359–370.

- [52] Ph. Michel, *Progrès récents du crible et applications (d'après Duke, Fouvry, Friedlander, Iwaniec)*, Astérisque **252** (1998), Exp. No. 842, 4, 185–209. Séminaire Bourbaki. Vol. 1997/98.
- [53] Ph. Michel, *Minorations de sommes d'exponentielles*, Duke Math. J. **95** (1998), no. 2, 227–240.
- [54] Ph. Michel and E. Ullmo, *Points de petite hauteur sur les courbes modulaires $X_0(N)$* , Invent. Math. **131** (1998), no. 3, 645–674.
- [55] Ph. Michel, *Autour de la conjecture de Sato-Tate pour les sommes de Kloosterman. II*, Duke Math. J. **92** (1998), no. 2, 221–254.
- [56] E. Fouvry and Ph. Michel, *Sur certaines sommes d'exponentielles sur les nombres premiers*, Ann. Sci. École Norm. Sup. (4) **31** (1998), no. 1, 93–130.
- [57] Ph. Michel, *Le rang de familles de variétés abéliennes*, J. Algebraic Geom. **6** (1997), no. 2, 201–234.
- [58] Ph. Michel, *Rang moyen de familles de courbes elliptiques et lois de Sato-Tate*, Monatsh. Math. **120** (1995), no. 2, 127–136.
- [59] Ph. Michel, *Autour de la conjecture de Sato-Tate pour les sommes de Kloosterman. I*, Invent. Math. **121** (1995), no. 1, 61–78.