VITA

Philippe MICHEL
Born Jan. 23 1969, LYON 4ème
Maried, 3 children

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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.

1993-94: Assistant Moniteur Normalien à l' Université Paris-Sud.

1989-93: École Normale Supérieure de Cachan.

1987-89: 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.

2003-08: Professeur de 1ère classe, Université Montpellier II.

1998-03: Professeur de 2ème classe, Université Montpellier II.

1999-00: member, Institute for Advanced Studies, Princeton.

1995-98: 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).

2009-14: Advanced Research Grant, "EQUIARITH", European Research Council.

2006: Invited speaker (Number Theory section), ICM Madrid.

2001-03: ACI Young Researcher.

1999-04: Member of Institut Universitaire de France.

1999: Prix PECCOT-VIMONT, Collège de France.

1999: Cours PECCOT, Collège de France.

Internal administrative services

2017- : Member of the executive committee of the Mathematics Institute.

2010-2017: Chair of the EPFL Math Hiring committee.

2014- : Member of the Direction of the School of Basic Sciences.

2015-2017: EPFL Math. Master Admission Committee.

2017- : PhD thesis award committee.

2008-2010: Math Doctoral School committee.

External Boards, Committees and Panels

2017, 2015, 2012: Hiring committee, ETHZ.

2016- : Scientific Board of the Mathematische Forschungsinstitut Oberwolfach (MFO).

2016, 2014, 2012: ERC starting grants Math. panel.

2014 : Senior selection Committee of the Institut Universitaire de France (IUF).

2014- : Mathematics section committee, Academia Europaea.

2013 : Junior selection Committee of the Institut Universitaire de France (IUF).

2013 : Hiring committee, Université de Grenoble.

2010-2017 : 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.

Editorial Boards

2015- : Publications Mathématiques de l'IHES.

2013- : Mathematische Zeitschrift.

2011- : Algebra & Number Theory.

2007- : Journal of Number Theory.

2006- : Journal de Théorie des Nombres de Bordeaux.

2004- : Archiv des Mathematik.

2004-07: International Journal of Number Theory.

Organization of Conferences

Jul-Dec 2017: "Euler Systems and Special Values of L-functions" Semester Program, Centre Bernoulli, EPFL (with H. Darmon, D. Jetchev and C. Skinner).

Sept. 2017: Oberwolfach meeting Automorphic forms and arithmetic (with V. Blomer and E. Kowalski).

Jan-May 2017: Special program on Analytic Number Theory at MSRI (with C. David, A. Granville, E. Kowalski, K. Soundararajan and T. Tao).

May 2015: Analytic Aspects of Number Theory, ETHZ (with H. Iwaniec and E. Kowalski)..

July 2014: Summer in Analytic Number Theory IHES, Bures/Yvette (with E. Kowalski).

May 2014: Monte Verita conference on cryptology, Centro S. Franscini (with D. Jetchev, E. Kowalski, A. Lenstra and J. Rosenthal).

Jun 2013: E. Fouvry 60th birthday conference, CIRM (with R. de la Bretèche, E. Kowalski and J. Rivat).

March 2013: Equidistribution in Number Theory and Dynamics, ETHZ (with M. Einsiedler, E. Kowalski and E. Lindenstrauss).

Jun 2011: Eva Bayer 60th birthday conference, EPFL.

Jan-Jun 2011: GANT Semester Program, EPFL (with E. Kowalski).

Each year since 2008: Number Theory Days a yearly workshop whose organization alternates between EPF Lausanne and ETH Zuerich and (since 2017) Univ. Basel since 2017 (currently joint with Ph. Habegger and E. Kowalski).

Teaching

Every university levels, for mathematics and engineering students; minicourses in international schools.

Mentoring

PhD Students: R. Zacharias (2016-), A. Peyrot (2012-16), D. Wuersch (2012-16), X. Ping (), H. Wu (2009-12), N. Templier (2005-08), B. Louvel -with S. J. Patterson- (2004-08), D. Trotabas (2004-07), G. Ricotta (2001-04), E. Royer -with E. Fouvry- (1998-01).

Post-doc: B. Topacogullari (2016-), R. Moreira Nunes (2015-), P. Leboudec (2013-16), I. Petrow (2013-17), M. Aka (2012-14), P. Nelson (2011-14), N. Walji (2011-14), U. Shapira (2010-12), R. Richard (2009-13), T. Zamojski (2010-12), J. Van Order (2009-13), R. Menares (2008-10), R. Rhoades (2008-09), A. Perrucca (2008-10), M. Cossutta (2009-10) .

Seminars, Colloquia & Invited Lectures

June 2018: Plenary lecture, Congrès Biennal de la Société Mathématiques de France, Lille.

June 2018: Conference on the Riemann Hypothesis, Bristol.

July 2017: Workshop "Aspects of Automorphic Forms and Applications", Hong-Kong.

May 2017: Don Zagier 65th birthday conference, Bonn.

June 2016: Juerg Kramer 60th birthday conference, Berlin.

Jan. 2016: Berlin Mathematical School Colloquium, Berlin.

Oct. 2015: Seminar, Renyi Institute, Budapest.

Apr. 2015: Number Theory Seminar, ETHZ.

Apr. 2015: Heilbronn seminar, Bristol.

Jan. 2015: Stanford Number Theory Seminar, Palo Alto.

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, Pasadena.

June 2013, 25th years of Number Theory (G. Wuestholz 65th birthday conference), ETHZ.

Feb 2013, Stanford Number Theory Seminar, Palo Alto.

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: Worshop ESI, Vienna.

Sept 2011: Dynamics on Homogeneous Spaces and Number Theory Conference, OSU, Columbus.

Aug 2011: Worshop 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.

January 2009: Joint IAS/PU number theory Seminar, Inst. Adv. Studies, Princeton.

January 2009: Stanford Number theory seminar, Palo Alto.

September 2008: Number theory seminar ETH Zuerich.

May 2008: Séminaire "Formes Automorphes" du Chevaleret, Université Paris VII.

May 2008: "Analytic number theory in higher rank", Courant Institute, New York.

March 2008: Workshop "Analytic number theory", Oberwolfach.

Feb. 2008: Colloquium, Univ. Neuchatel.

December 2007: Colloquium, Université Clermont-Ferrand.

June 2007: Caltech Number theory seminar, Pasadena.

May 2007: "L-functions and Automorphic forms" for D. Goldfeld's 60th birthday, Columbia University.

April 2007: Esnault-Viehweg Oberseminar, Univ. Essen.

January 2007: Séminaire de Théorie des Nombres du Chevaleret.

Sept. 2006: International Arithmetic Algebraic Geometry conference, Madrid.

Août 2006: ICM Madrid.

May 2006: Séminaire ENS Lyon.

Apr. 2006: Hahn Lectures, Yale University.

Apr. 2006: Number Theory Days, ETH. Zürich.

March 2006: Séminaire de Géométrie Algébrique, Univ. Rennes 1.

Jan. 2006: Stanford Math. Colloquium, Palo Alto.

Nov. 2005: Colloquium, EPF Lausanne.

June 2005: Gauss/Dirichlet conference (for the150-th anniversary of C. F. Gauss's death and the 200-th anniversary of P. L. Dirichlet's birth), Goettingen.

March 2005: Séminaire de Théorie des Nombres de Paris VI-VII au Chevaleret.

January 2005: Automorphic form Seminar, Osaka City University, Osaka.

December 2004: Joint Columbia/CUNY/NYU Number Theory Seminar, New York.

October 2004: Séminaire de théorie des Nombres, EPFL, Lausanne.

March 2004: Séminaire de théorie Analytique des Nombres, IHP, Paris.

Feb. 2004: Colloquium "Deutsch-Französischer Diskurs", Université de Saarbruecken.

Dec. 2003: "Arithmetic Geometry and Number Theory", N. M. Katz's 60th birthday, Princeton University.

January 2003: Séminaire de Théorie des Nombres de Paris VI-VII au Chevaleret.

December 2002: Séminaire de théorie Analytique des Nombres, IHP, Paris.

November 2002: Number Theory Seminar, Courant Institute, New York.

November 2002: IAS/Princeton Number Theory seminar.

June 2002: Seminar on Number Theory, CalTech, Pasadena.

May 2002: Séminaire de Géométrie Arithmétique, IRMA, Strasbourg.

Fevrier 2002: Séminaire "Formes Automorphes" du Chevaleret, Université Paris VII.

May 2002: "Zeta-Functions and Associated Riemann Hypotheses", Courant Institute NYU, New York.

Fevrier 2002: Séminaire d' Arithmétique et de Géométrie Algébrique d' Orsay.

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.

April 2001: Seminar on Number Theory, CalTech, Pasadena.

January 2001: Séminaire de théorie Analytique des Nombres, IHP, Paris.

October 2000: Seminar of Number Theory, Ohio State University, Columbus.

Apr. 2000: "Recent Trends in Analytic Number Theory", Institute for Advanced Studies, Princeton.

December 1999: Automorphic Forms and L-functions seminar, Institute for Advanced Studies, Princeton.

December 1999: Seminar on Arithmetic Geometry and Number Theory, CUNY, New York.

November 1999: Seminar of Number Theory, Columbia University, New York.

April 1999: Seminar on Number Theory, Mathematical Institute, Oxford University.

March 1999: Cours Peccot, Collège de France.

October 1998: Colloquium et Seminaire d'Algèbre et Géométrie, Université Montpellier II.

April 1998: Seminar on Number Theory and Harmonic Analysis IAS-Princeton-Rutgers, Princeton.

April 1998: Séminaire de Théorie des Nombres de Institut Fourier, Grenoble.

March 1998: Séminaire BOURBAKI.

February 1998: Séminaire de Théorie des nombres de Bordeaux.

February 1998: Séminaire de Théorie des Nombres de Paris VI-VII.

January 1998: Séminaire de Géométrie Arithmétique de Rennes.

December 1997: Séminaire de Théorie des Nombres de Nancy.

April 1997: Séminaire d'Arithmetique et de Geométrie Algébrique. d'Orsay.

May 1996: Séminaire de Théorie des nombres de Bordeaux.

Jul. 1997: International conférence in number theory, A. Schinzel's 60-th birthday, Zakopane.

Fevrier 1996: Séminaire de Théorie des Nombres de Paris VI-VII

April 1995: Séminaire de Théorie des Nombres de Institut Fourier, Grenoble.

March 1995: Séminaire d'Arithmetique et de Geométrie Algébrique. d'Orsay.

Lecture series

February 2017: MSRI semester program in Analytic number Theory, Introductory Workshop, 4 Lectures.

March 2016: Arizona Winter School, 4 lectures + students projects.

July 2015: Santaló Summer School, Santander, 4 lectures.

Sept-Dec 2009: Nachdiplomvorlesung, 14 weeks lecture series, ETH Zuerich.

June 2009: Pfingsttermin Oberwolfach Seminar, Oberwolfach, 5 lectures.

May 2008: “Analytic number theory in higher rank”, Courant Institute, 3 lectures.

April 2007: Spring school ”Analytic Number Theory”, ICTP, 3 lectures.

Aug. 2005: Summer school ”Analytic number theory and automorphic forms”, Hangzhou, 3 lectures.

June 2005: ”rencontres du troisième cycle”, Université Bordeaux I, 2 lectures.

April 2004: Newton Institute school ”Random matrix theory and Number Theory”, Newton Institute, Cambridge, 4 lectures.

July 2002: IAS/PCMI Graduate Summer School, Park City, 5 lectures.

January 2001: ENS Paris, 4 lectures.

December 2000: SMF “États de la Recherche en Théorie Analytique des Nombres” à Bordeaux, 3 lectures.

June 2000: Colloque Jeunes chercheurs en Théorie des nombres, Bordeaux, 3 lectures.

March 1999: Collège de France: Cours Peccot, 8 lectures.

Publication list

Research papers are available in .pdf format from the webpage
`http://tan.epfl.ch/cms/site/tan/lang/fr/ph.michel/publications`

In preparation

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

[2] V. Blomer, É. Fouvry, E. Kowalski, P. Michel, D. Milicevic, and W. Sawin, *Non-vanishing of twisted L-functions.*

Research Papers

[1] E. Kowalski, P. Michel, and W. Sawin, *Bilinear sums of Kloosterman sums and applications*, Ann. of Math. **186** (2017), no. 2. (to appear) `arXiv:1511.01636`.

[2] V. Blomer, É. Fouvry, E. Kowalski, P. Michel, and D. Milicevic, *On moments of twisted L-functions.*, Amer. J. Math **139** (June 2017), no. 3. `arXiv:1411.4467`.

[3] V. Blomer, É. Fouvry, E. Kowalski, P. Michel, and D. Milicevic, *Some applications of smooth bilinear forms with Kloosterman sums.*, Proceedings of the Steklov Institute (to appear) (2016). (special issue for the 125th anniversary of I. M. Vinogradov) `arXiv:1604.07664`.

[4] É. Fouvry, E. Kowalski, Ph. Michel, C. S. Raju, J. Rivat, and K. Soundararajan, *On short sums of trace functions*, Ann. Inst. Fourier (Grenoble) **167** (2017), no. 1, 423–449. `arxiv:1508.00512`.

[5] É. Fouvry, E. Kowalski, and Ph. Michel, *Algebraic twists of modular forms and Hecke orbits*, GAFA **25** (2015), no. 2, 580-657. `arXiv:1207.0617`.

[6] É. Fouvry, E. Kowalski, and Ph. Michel, *A study in sums of products*, Philosophical Transactions of the Royal Society A **373** (2015). `arXiv:1304.3199`.

[7] É. Fouvry, E. Kowalski, and Ph. Michel, *On the exponent of distribution of the ternary divisor function*, Mathematika **61** (2015), no. 1, 121-144. `arXiv:1304.3199`.

[8] P. Michel and D. H. J. Polymath, *Variants of the Selberg sieve, and bounded intervals containing many primes*, Research in Mathematical Science **1** (2014), no. 12, 1-83. `arXiv:1407.4897`.

[9] P. Michel and D. H. J. Polymath, *New equidistribution estimates of Zhang type*, Algebra & Number Theory **8** (2014), no. 9, 20672199. `arXiv:1402.0811`.

[10] É. Fouvry, E. Kowalski, and Ph. Michel, *Algebraic trace functions over the primes*, Duke Math. Journal **163** (2014), no. 9, 1683-1736. `arXiv:1211.6043`.

[11] É. Fouvry, E. Kowalski, and P. Michel, *Counting sheaves using spherical codes*, Math. Res. Lett. **20** (2013), no. 2, 305–323.

[12] É. Fouvry, E. Kowalski, S. Ganguly, and Ph. Michel, *Gaussian distribution for the divisor function and Hecke eigenvalues in arithmetic progressions*, Com. Math. Helvetici **89** (2014), 979-1014. `arXiv:1301.0214v1`.

[13] 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. `arXiv:1211.3282`.

[14] 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:1110.4526`.

[15] J. S. Ellenberg, P. Michel, and A. Venkatesh, *Linnik's ergodic method and the distribution of integer points on spheres*, Automorphic representations and L-functions, Tata Inst. Fundam. Res. Stud. Math., vol. 22, Tata Inst. Fund. Res., Mumbai, 2013, pp. 119–185. MR3156852

[16] 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:1109.0413`.

[17] V. Blomer and Ph. Michel, *Sup-norms of eigenfunctions on arithmetic ellipsoids*, Int. Math. Res. Not. IMRN **21** (2011), 4934–4966.

[18] 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.

[19] Ph. Michel and A. Venkatesh, *The subconvexity problem for GL_2*, Publ. Math. IHES **111** (2010), no. 1, 171-280, DOI 10.1007/s10240-010-0025-8. arXiv:0903.3591.

[20] 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.

[21] 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.

[22] 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.

[23] 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.

[24] E. Fouvry and Ph. Michel, *Sur le changement de signe des sommes de Kloosterman*, Ann. of Math. (2) **165** (2007), no. 3, 675-715.

[25] 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.

[26] 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.

[27] 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.

[28] 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.

[29] 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.

[30] 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.

[31] 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.

[32] 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.

[33] 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.

[34] 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.

[35] 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.

[36] Ph. Michel, *Familles de fonctions L de formes automorphes et applications*, J. Théor. Nombres Bordeaux **15** (2003), no. 1, 275–307. Les XXIIèmes Journées Arithmetiques (Lille, 2001).

[37] E. Fouvry and Ph. Michel, *Sommes de modules de sommes d'exponentielles*, Pacific J. Math. **209** (2003), no. 2, 261–288.

[38] 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.

[39] E. Kowalski and Ph. Michel, *Zeros of families of automorphic L-functions close to 1*, Pacific J. Math. **207** (2002), no. 2, 411–431.

[40] Ph. Michel and J. Vanderkam, *Simultaneous nonvanishing of twists of automorphic L-functions*, Compositio Math. **134** (2002), no. 2, 135–191.

[41] 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.

[42] E. Kowalski, Ph. Michel, and J. VanderKam, *Rankin-Selberg L-functions in the level aspect*, Duke Math. J. **114** (2002), no. 1, 123–191.

[43] É. Fouvry and Ph. Michel, *À la recherche de petites sommes d'exponentielles*, Ann. Inst. Fourier (Grenoble) **52** (2002), no. 1, 47–80.

[44] 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.

[45] 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.

[46] E. Kowalski and Ph. Michel, *Deux théorèmes de non-annulation de valeurs spéciales de fonctions L*, Manuscripta Math. **104** (2001), no. 1, 1–19.

[47] 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.

[48] E. Kowalski and Ph. Michel, *Explicit upper bound for the (analytic) rank of $J_0(q)$*, Israel J. Math. **120** (2000), 179–204.

[49] 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.

[50] E. Kowalski and Ph. Michel, *A lower bound for the rank of $J_0(q)$*, Acta Arith. **94** (2000), no. 4, 303–343.

[51] 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.

[52] 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.

[53] 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.

[54] 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.

[55] Ph. Michel, *Sur les zéros de fonctions L sur les corps de fonctions*, Math. Ann. **313** (1999), no. 2, 359–370.

[56] 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.

[57] Ph. Michel, *Minorations de sommes d'exponentielles*, Duke Math. J. **95** (1998), no. 2, 227–240.

[58] Ph. Michel and E. Ullmo, *Points de petite hauteur sur les courbes modulaires $X_0(N)$*, Invent. Math. **131** (1998), no. 3, 645–674.

[59] Ph. Michel, *Autour de la conjecture de Sato-Tate pour les sommes de Kloosterman. II*, Duke Math. J. **92** (1998), no. 2, 221–254.

[60] 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.

[61] Ph. Michel, *Le rang de familles de variétés abéliennes*, J. Algebraic Geom. **6** (1997), no. 2, 201–234.

[62] Ph. Michel, *Rang moyen de familles de courbes elliptiques et lois de Sato-Tate*, Monatsh. Math. **120** (1995), no. 2, 127–136.

[63] Ph. Michel, *Autour de la conjecture de Sato-Tate pour les sommes de Kloosterman. I*, Invent. Math. **121** (1995), no. 1, 61–78.

Surveys

[1] É. Fouvry, E. Kowalski, and Ph. Michel, *Trace functions over finite fields and their applications*, Colloquium De Giorgi 2013 and 2014, Colloquia, vol. 5, Ed. Norm., Pisa, 2014, pp. 7–35.